

# THE IRON AGE

New York, August 20, 1925

ESTABLISHED 1855

VOL. 116, No. 8

## Standards Bureau Metal Research

Funds, Equipment, Personnel and Type of Problems  
Met at Bureau in Washington—Further  
Support from Industry Wanted

BY DR. H. W. GILLETT\*



HAT the Bureau of Standards of the Department of Commerce has a metallurgical laboratory in Washington at which metallurgical problems are studied, and that the results of this work are recorded in the technical press, or in Government publications purchasable from the Superintendent of Documents for nominal sums, the metallurgical industry knows. It knows that this laboratory is supported by public

funds. It may not know, and may very properly wonder, what these funds amount to, what they are spent for, and whether their expenditure is a profitable public investment. The object of this and a succeeding article is to supply information on the first two points, and to secure suggestions from the readers of THE IRON AGE that will aid in shaping the work so that the answer to the third query may be in the affirmative.

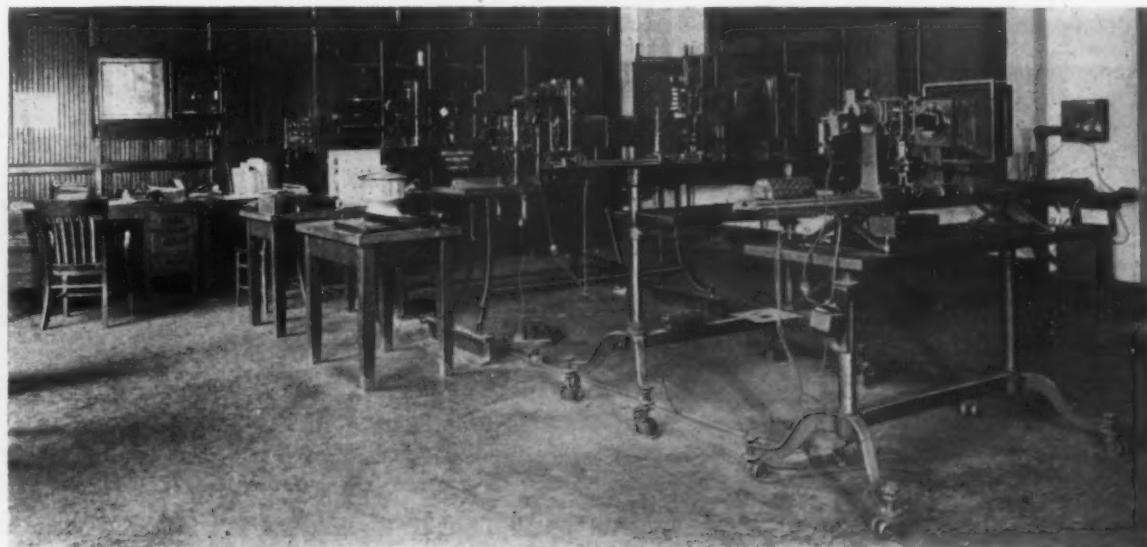
The bureau is not without advice in the orienting of its metallurgical work. One of the first acts of Dr.

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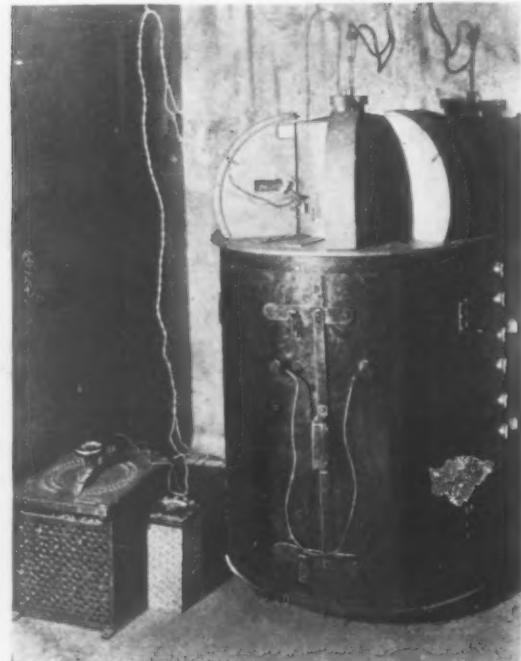
G. K. Burgess (who has since been elevated to the directorship of the bureau), after a separate metallurgical division was started under his guidance on July 1, 1913, was to arrange for the formation of advisory committees on ferrous and non-ferrous metallurgy. Some 45 eminent metallurgists composing these committees meet annually at the bureau and give invaluable advice and counsel, not only at the meetings but, by correspondence, continually. Many other metallurgists keep closely in touch with the bureau's work and useful suggestions are received from them. It is hoped that this account of the work may lead others to establish similar contact and give their suggestions.

### Funds Available

Congress appropriates one special fund for metallurgical research. Other funds, for industrial research, for testing structural materials, for equipment and for salaries for work on fundamental constants and properties of matter, are appropriated for the bureau as a whole and allotments are made by the director. For the past and the present fiscal years the total amount so appropriated or allotted to the metallurgical division has approximated \$100,000 yearly. The pro rata general bureau expense for administration and upkeep,



Part of the Equipment of the Metallographic Laboratory at the Bureau of Standards



*The X-Ray Spectograph Used at the Bureau of Standards in the Study of the Crystal Structure of Metals. The X-ray tube is inside the case. X-rays pass through windows in the upper part of the case, impinge on specimens in the quadrant-shaped "cassettes," and are reflected from the specimen to photographic films stretched over the curve of the quadrant. According to the arrangement of the atoms in the crystals, the X-rays are reflected at various angles and make lines on the film. From the spacing of these lines, the crystal structure may be deduced. The cassette at the left is rigged up for running a test on a heated specimen*

corresponding to the amount directly assigned, amounts to around \$20,000.

Other Government departments often refer metallurgical problems to the bureau. When these are large projects, funds are sometimes transferred to cover part of the expense of the work. In recent years such transfer funds for metallurgical work have approximated \$10,000 per year. Research associates or research fellows on metallurgical work, whose salaries are paid by those supporting the associateships or fel-

lowships, account for a few thousand dollars more, but such funds are not handled by the bureau.

Much work which may properly be classed as metallurgical, but which pertains to the field of other divisions, is done outside the metallurgical division: The electrical and magnetic properties of metals, and the corrosion of metals in soils as affected by stray currents, are dealt with by the electrical division; the density and thermal expansivity of metals are studied by the division of weights and measures; the melting points and thermoelectric power of metals, by the heat and power division; the spectra of metals, by the optics division; methods of chemical analysis, standard samples, work on platinum metals and on electroplating, by the chemistry division; and the methods of mechanical testing, the study of built-up structures, and various engineering applications of metals come under the division of mechanics and sound, especially the engineering mechanics section.

At least as much is spent on projects of metallurgical interest outside the metallurgical division as inside it. With all of this other work the metallurgical division is in close contact and many of the projects require active cooperation by the division.

#### Staff

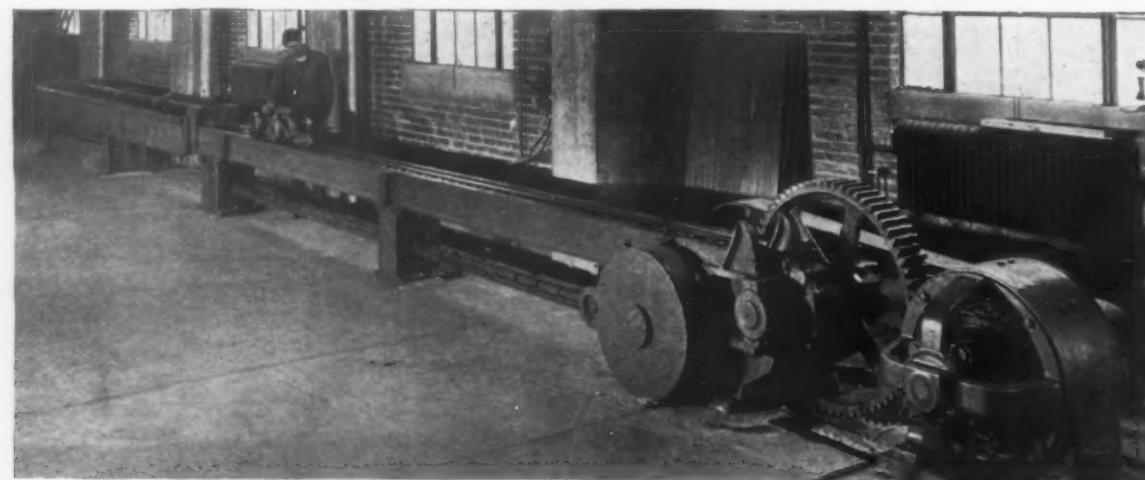
The staff of the metallurgical division consists of 16 men and two women of full professional grade, i.e., people with a college degree or its equivalent; 19 of sub-professional grade, all but two or three of whom are taking college work in the evening classes of Washington universities; four shop mechanics; and a clerical staff of three. There are also one research associate and one research fellow, both of full professional grade.

The metallurgical department of the National Physical Laboratory—the English analog of the Bureau of Standards—has a staff of over 80, with over 30 of full professional grade, thus having almost twice the man-power of the metallurgical division of standards. It has been in existence almost twice as long as the corresponding division here.

#### Equipment

Metallurgical equipment available is so similar to that of the "N. P. L." as recently described in these columns\* that details are unnecessary. Electric arc furnaces for steel and brass, a small cupola, gas- and oil-fired furnaces, vacuum electric resistor furnaces and several small high-frequency induction furnaces provide for melting metals; a 16-in. rolling mill, 150-ton press, trip hammer and draw bench for working them; a variety of furnaces for heat-treating and carburizing, extensive equipment for micro-photography, and

\*Rosenhain, Walter, "Metallurgical Research in England," THE IRON AGE, April 2 and 16, 1925, pages 975 and 1129.



*Draw Bench at the Bureau of Standards*

for the study of crystal structure by the X-ray spectrometer, special equipment for ordinary and long-time tests at high temperatures, for study of quenching phenomena, for tests of machinability and tool life, for study of methods of wear testing, of corrosion testing, and of testing molding sands, refined apparatus for thermal analysis and for the study of gases in metals and much minor and auxiliary apparatus is provided.

Much other specialized apparatus applicable to metallurgical problems is, of course, available. There are few problems in physical metallurgy that are sus-

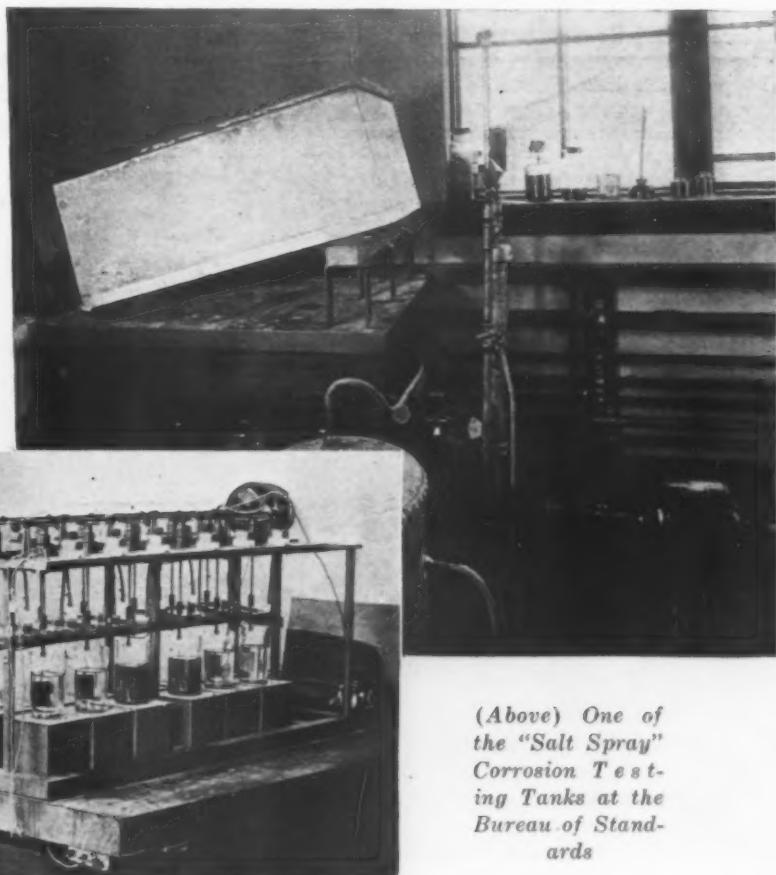
ceptible of laboratory attack that cannot be studied on a laboratory scale adequate for most scientific purposes.

with research in the field of physical metallurgy. There is necessity for routine acceptance testing for Government purchases, but little of this falls to the lot of the division. Testing of fusible boiler plugs for the Steamboat Inspection Service, of babbitt metal for the Emergency Fleet Corporation, of molding sand for the Panama Canal, and examination of articles suspected of misbranding for the Federal Trade Commission, exemplify the routine class of work.

Much examination of failed materials is done for the Army, Navy and other branches, but this work is

*Five Different Methods of Making Corrosion Tests Are Shown Here and on Pages 464 and 465*

*(Below) Apparatus for the Study of Electrolytic Corrosion Testing Methods at the Bureau of Standards*



*(Above) One of the "Salt Spray" Corrosion Testing Tanks at the Bureau of Standards*

ceptible of laboratory attack that cannot be studied on a laboratory scale adequate for most scientific purposes.

#### Types of Problems Studied

The problems to which the funds, staff and equipment may be applied are defined by the organic act establishing the bureau and by the appropriations providing funds. Inasmuch as the titles of the items "metallurgical research" and "industrial research in metallurgy" are broad, and the organic act charges the bureau with the determination of fundamental constants and the study of the fundamental properties of matter, the question of the legality of the study of any metallurgical problem that may arise is seldom an issue.

That branch of metallurgy dealing with the reduction of metals from their ores is the province of the Bureau of Mines, while that dealing with metals and alloys from that point on is the field of Standards. Within the Bureau of Standards is a further subdivision by which the metallurgical division deals with problems of control of properties of metals and alloys, while the testing of metals and built-up structures, from the inspection and engineering points of view, is handled by the engineering mechanics section.

While the metallurgical division has much to do with the development of special testing methods as a means of control of properties, it does little purely routine testing. It is concerned almost exclusively

of a research rather than a routine nature and most of the projects brought in by other Government departments require extended research. Work for these other departments accounts for about 30 per cent of the division's funds.

Work in the nature of routine testing or small research problems which can be handled by consulting laboratories is not done for the general public. Competition with consulting laboratories is scrupulously avoided. If no consulting laboratory is equipped for special tests, the bureau may make such tests for private firms, fees being charged which go into the Treasury and not to the bureau. But no tests are made, and no opinions rendered, for use in advertising or sales promotion.

Research work at the National Physical Laboratory, on the other hand, is done for individual industrial firms, the work and its results being held entirely confidential to the firm in question, which bears the entire cost. Nothing of this sort obtains at Standards, as it is believed that secrecy in a Government laboratory is justified only in the case of work of a military nature for the Government itself. At Standards, it is possible for a group of firms, or in some cases for an individual firm, to utilize, in work done by a "research associate" whose salary is paid by the firm or firms, the laboratory equipment when it is not otherwise required, and to get the cooperation and supervision of the staff, but the work of the research associates is not secret. Research associates select problems of special interest to

the firms who pay their salaries, but which are also of interest to the industry as a whole. The results are printed as bureau publications.

Suggestions for research work of a fundamental nature, of value to the whole industry, are gladly received from individual firms, and much of the work in progress originated in this way. But work of interest to single firms only is not undertaken. There is high authority for shunting the many requests, for work for private purposes at public expense, to commercial laboratories equipped for such work. In his inaugural address, President Coolidge emphasized the fact that public funds must be spent only for projects which "beyond reasonable doubt contribute to the public welfare."

Problems officially presented for attention by national technical societies are generally of the fundamental type which does contribute to the public welfare

from the laboratory dealt with the quenching of carbon steel. One alloy steel manufacturer found that this work explained in a scientific fashion certain precautions necessary in the heat-treatment of alloy steel, although the work was on carbon steel only, and reprinted the paper for distribution to his customers, so as to bring before the users of the steel the facts on which is based a rational treatment of some of the steels made by this firm.

Another firm states<sup>‡</sup> that, using as a basis the data shown in this same paper, although the paper dealt with higher carbon steel, it has been able to make quenching alone duplicate the results previously obtained by quenching and tempering low-carbon steel, and states that the process worked out on this basis is easier to control, more uniform in practical results, quicker and cheaper than the former method.

Such cases encourage the bureau in its belief that



*Apparatus for Accelerated Simulated Atmospheric Exposure Corrosion Test at the Bureau of Standards. Specimens are supported in slots in the rings on the corner of the table, which are then put inside the double tub on the left. CO<sub>2</sub> and SO<sub>2</sub> in regulated amounts are passed in, and water in the bottom of the lower tub supplies water vapor. The extra upper tub shown at the right can be put on instead of the one shown in place, and water spray directed on the specimens to simulate rain. The temperature is thermostatically controlled*

and to which the bureau's distinguished Board of Visitors has recently urged<sup>†</sup> greatest attention. About 20 per cent of the work of the metallurgical division is done at the direct request of committees of such societies as the American Foundrymen's Association, American Ceramic Society, and especially the American Society for Testing Materials. Some of this work is done along definite lines laid down by committees, when bureau representatives have an active part in the shaping of the program. But, in all such cases, adherence to a specific program is within the discretion of the bureau. Committee activities are useful in steering bureau work so as to fill gaps and avoid duplication, but no agreement to follow out a program to be laid down by a committee is made in advance of the program, so that the administration of its public funds remains in the hands of the bureau.

Collecting of fundamental metallurgical facts, from a scientific point of view, the bureau believes to be its first duty. While it deals with "industrial" research, the line of demarcation between that and "scientific" research is hazy. For example, a recent publication

the most important thing it can do is to study the fundamentals of any metallurgical problem.

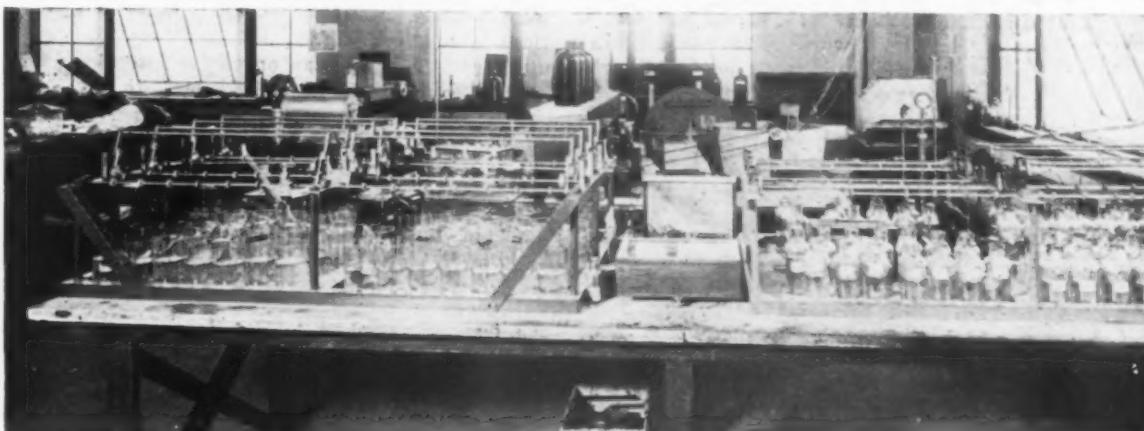
The product of the laboratory is information. In the last fiscal year there were issued or in press as Bureau of Standards publications: 23 titles, made up of five scientific papers, 14 technologic papers, three circulars and one miscellaneous publication, of metallurgical interest. Twelve of these were from the metallurgical division. During that period 46 publications on metallurgical subjects were made in scientific and technical periodicals, journals, etc., or are in the hands of the publishers, of which 31 were by members of the metallurgical division. The titles of these publications would give a very fair idea of the scope of the metallurgical work but would take too much space.\*

It will be found that the projects uniformly deal

\*Smith, R. H. "Some Physical Properties of Low-Carbon Steel," Transactions American Society for Steel Treating, Vol. I, 1925, page 569.

\*Lists of publications of the bureau and of the division can be obtained on request to the bureau. A request will also put anyone on the mailing list for announcements of bureau publications, which are sent out at frequent intervals. The Technical News Bulletin, which is issued monthly and describes progress of work in the laboratories, may be obtained from the Superintendent of Documents, Government Printing Office, on a subscription basis, at 25c. per year.

<sup>†</sup>Report of Board of Visitors to the Bureau of Standards, Bureau of Standards, Miscellaneous Publications, No. 63, 1925.



*Alternate Immersion and Interrupted Immersion Corrosion Testing Apparatus at the Bureau of Standards. Specimens, suspended on glass hooks, are automatically dipped into and pulled out of a solution, or dipped in, pulled out and given time to dry before the next dip*

with the development of testing methods, or with the study, control and utilization of the fundamental properties of metals. Several comprehensive reports on projects carried on for other Government departments were also made to those departments, parts of which may be available for later publication. Only a few of the general projects, such as information, testing, service and specification work, will be mentioned here.

#### Information—10 Per Cent†

Under this heading is included preparing for publication results of previous projects no longer active, this work having been heavy; the preparation of circulars of information, such as that on nickel, a revision of the one on aluminum being under way; and much work in filing and indexing-bureau reports and current metallurgical literature to make this material more available for the use of the bureau and to facilitate replying to inquiries.

Besides its ordinary correspondence, the division replies to well over 1000 specific requests for metallurgical information by letter and has over 400 visitors yearly, most of whom seek specific information. While the information work is systematized as far as seems practical, and is centered in the hands of an experienced technical employee, many requests require the detailed attention of one or several experts and one inquiry or one visitor may take much time and thought.

†These percentage figures refer to the proportion of division funds expended on the various projects in the past fiscal year.

The wide contacts with the industry, the excellent library facilities and the broad scientific background of its research work make the bureau a clearing house for metallurgical information in its field, and every effort is made to bring to bear all possible sources of information on the many and various metallurgical problems referred to it. The inquiries range from highly technical ones from the metallurgical departments of great corporations to one from a convict seeking information on suitable materials for manufacture, after he is released, of a specialty thought out during confinement.

#### Testing and Service Work—15 Per Cent

This item includes a wide variety of work, chiefly for other Government departments, and partly for other divisions of the bureau, the latter being balanced by work done by other divisions on projects of the metallurgical division. "Courtesy" tests for the public, when the data thereby obtained are useful in the bureau's work, and a few "pay" tests for the public when consulting laboratories are not equipped for the work, are included under this heading. Specimens studied range from a tack-hammer to the propeller of the Leviathan, and from bullets in a murder case, for the District of Columbia police, to a metal alleged to be "aluminum, with part of the aluminum atom exploded off" for the General Supply Committee. One test required the making of 1200 Brinell impressions.

Service work includes making over 1500 castings in

(Continued on page 513)

*Continuous Immersion Corrosion Test Apparatus at the Bureau of Standards. Specimens are placed in various solutions in the bottles inside the tub. The temperature is thermostatically controlled. In the photograph the test is being run without aeration, which may be provided for*



# Iron Hottest at Middle of Cast

Tuyere, Metal and Slag Temperatures of a Southern Foundry Furnace Studied—Hearth Cooler Than Northern Furnaces

BY S. P. KINNEY\*

**A**PPROXIMATELY 1000 temperature readings were observed at the tuyeres and metal and slag of a blast furnace in the Southern district, Alabama, while producing foundry iron. Results are discussed herein and some comparison is made with results obtained at a number of other furnaces and at the Bureau of Mines experimental furnace at its North Central Experiment Station, Minneapolis.

## Method of Obtaining Temperatures

*Tuyere temperatures* were obtained by the method described by Royster and Joseph.† It was not found practicable to observe the temperature of individual pieces of coke at the nose of the tuyere, as was done by Royster, Joseph and Kinney‡ at the experimental furnace at Minneapolis. The results given for tuyere temperatures are an average of the temperatures of a number of pieces of burning coke at an unknown distance from the nose of the tuyere. With this must be taken into account the presence of a gas flame which is evidently burning at the nose of the tuyere.

*Metal temperatures* were taken as the metal emerged from beneath the skimmer just outside of the iron notch. Care was taken to observe that the surface was clean and free from slag. All temperatures were corrected for emissivity.

*Slag temperatures* were taken at the cinder notch and frequently at the iron notch at cast time. The results given for slag are a summary of a considerable number of observations on "flushes" before and after each cast.

## Relation Between Blast and Hearth Temperatures

As a matter of record and for the purpose of calculation, the daily averages of temperature readings

\*Associate metallurgist, North Central Experiment Station, Bureau of Mines, Minneapolis. The paper is published by permission of the Director, United States Bureau of Mines.

†Royster, P. H., and Joseph T. L., "Pyrometry in Blast Furnace Work," American Institute of Mining and Metallurgical Engineers, volume on Pyrometry, 1920, pages 544 to 558. Discussion on pages 558 to 567.

‡Royster, P. H., Joseph, T. L., and Kinney, S. P., "Significance of Hearth Temperatures," *Blast Furnace and Steel Plant*, March, 1924, pages 154 to 158.

have been tabulated with the metal and slag analysis, the iron produced and the coke consumption. These results are shown in Table I. Grouped according to increasing blast temperature, they are shown in Table II and are plotted in Fig 1. Examination of the curves

Table II—Metal, Slag and Tuyere Temperatures Grouped and Arranged According to Increasing Blast Temperatures

	Blast	Metal	Slag	Tuyere
	327	1342	...	1557
	397	1352	...	1564
	404	1362	...	1564
	405	...	1411	
	456	1401	1381	1362
	483	1384	1414	1574
	505	1420	1418	1615
	544	1405	1414	1537
	578	1413	1418	
Average	477	1385	1409	1534

will show that the blast temperature varied approximately 250 deg. Cent., and the metal and tuyere temperatures increased with an increase in blast temperature. The slag temperature remained constant. With an increase of 147 deg. Cent. in blast temperature the metal temperature increased 53 deg. Cent. Reference to Fig. 1 will show that the results for the tuyere are rather indefinite in trend; the curve has been drawn to show a slight increase in temperature, possibly 23 deg.

## Effect of Blast Temperature Compared with Results Previously Reported

Results obtained\*\* by observing the increase of tuyere temperature with an increase of 346 deg. Cent. in the blast temperature in the experimental blast furnace at Minneapolis showed that for each 2 deg. increase in blast temperature a 1 deg. increase was indicated in the tuyere temperature. Results from a group of industrial furnaces showed a decrease of 100 deg. Cent. in tuyere temperatures with an increase of 210 deg. Cent. in blast temperature; the slag and metal

\*\*Royster, P. H., Joseph, T. L., and Kinney, S. P. Work cited.

Table I.—Observed Temperatures of Tuyeres, Metal and Slag: Analysis of Metal and Slag; Amount of Iron Produced and Coke Consumed

Date	Temperatures, Deg. Cent.				Analysis of Slag, Per Cent				Analysis of Metal, Per Cent				Iron Produced, Tons	Coke per Ton of Iron, Lb.		
	Blast	Metal	Slag	Tuyere	SiO <sub>2</sub>	Al <sub>2</sub> O <sub>3</sub>	CaO <sup>‡</sup>	S	Ratio <sup>b</sup>	Si	S	P	Mn			
Sept.																
24	560	1,396	1,418	...	36.60	17.80	43.86	1.24	1.70	2.19	0.058	0.76	0.78	...	...	
25	582	1,438	1,415	...	36.80	19.10	42.48	1.22	1.75	2.30	0.038	0.50	1.00	336	2,983	
26	574	1,394	1,426	...	36.80	19.10	42.48	1.22	1.75	2.30	0.038	0.50	1.00	334	2,985	
27	462	1,382	1,405	...	37.80	18.40	41.98	1.32	1.73	2.07	0.049	0.99	0.75	334	2,985	
Oct.																
3	327	1,342	...	37.00	16.10	41.94	1.46	1.83	0.47	0.164	0.56	0.33	191	3,294		
4	379	1,352	...	1,557	37.20	15.62	45.10	1.58	1.85	2.30	0.045	0.66	0.90	294	3,390	
5 <sup>a</sup>	547	1,415	1,405	1,487	...	36.80	21.71	38.07	...	1.62	2.65	0.080	0.73	0.72	328	3,375
8	450	1,421	1,358	1,362	36.80	21.71	38.07	...	1.62	2.65	0.080	0.73	0.77	328	3,375	
9	504	1,400	...	1,675	37.60	16.70	42.54	1.66	1.78	2.85	0.034	0.53	0.65	292	3,381	
9	496	1,442	...	1,532	37.00	16.61	44.29	1.60	1.80	2.04	0.075	0.51	0.84	290	3,306	
12	482	1,393	1,424	1,551	36.40	17.03	44.60	1.47	1.81	2.26	0.047	0.66	0.79	350	3,184	
13	482	1,347	1,405	1,608	38.80	16.78	42.50	1.40	1.74	2.02	0.045	0.64	0.70	339	3,112	
15	521	...	1,420	1,555	36.80	17.53	42.70	1.47	1.78	2.09	0.032	0.59	0.70	351	3,101	
16	405	1,362	...	1,564	37.20	18.62	42.26	1.32	1.73	2.04	0.043	0.47	0.54	293	3,074	
18	1,495	...	...	34.20	18.95	44.80	1.55	1.82	2.43	0.045	0.62	0.60	224	3,093		
23	488	1,390	...	1,565	35.60	18.37	44.10	1.43	1.83	1.03	0.050	0.72	0.39	214	3,119	
24	550	...	1,607	36.50	17.20	45.20	1.58	1.84	3.34	0.010	0.49	0.48	230	2,136		
25	493	1,419	1,415	...	38.20	14.86	45.00	1.44	1.80	2.25	0.016	0.56	0.45	281	3,140	
26	482	1,405	...	37.00	17.61	42.41	1.48	1.87	2.07	0.056	0.56	0.65	316	3,138		
27	404	...	1,411	...	33.60	17.86	46.50	1.54	1.88	1.65	0.029	0.64	0.60	215	3,356	

\* Blast, metal, slag and tuyere temperatures taken from Fig. 1 for Oct. 5. Blast and tuyere temperatures are averages from curve taken for periods 9 to 11:30 a. m. and from 11:30 to 5:30 p. m.

<sup>a</sup> Ratio = (CaO) + (SiO<sub>2</sub> + Al<sub>2</sub>O<sub>3</sub> + S) : (SiO<sub>2</sub> + Al<sub>2</sub>O<sub>3</sub> + S).

<sup>b</sup> 25 deg. Cent. added to tuyere readings for correction factor for glass screen in tuyere sight.

<sup>c</sup> MgO included.

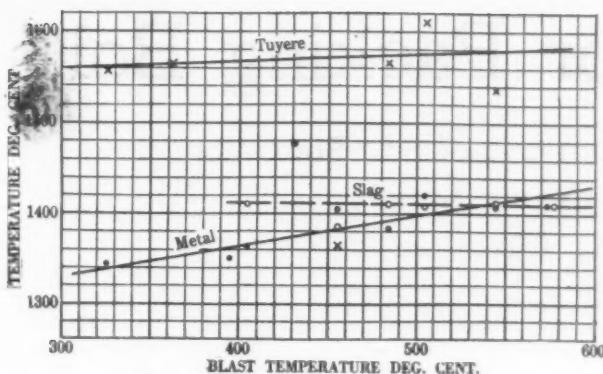


Fig. 1—Relation Between Blast, Tuyere, Metal and Slag Temperatures

temperatures remained practically constant. These results per degree rise in blast temperature are shown in Table VI.

#### Effect of Blast Temperature on Slag Temperature

Johnson's\* "free-running" theorem, "when the slag becomes fluid enough to fall into the bath, it does so without further rise in temperature," is borne out in the observations on the experimental furnace at Minneapolis, the group of industrial furnaces, and the

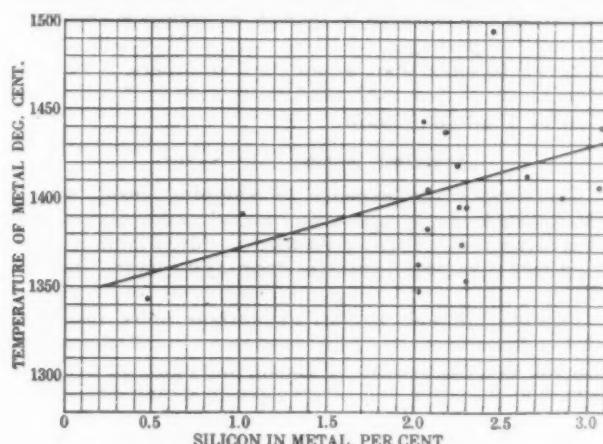


Fig. 2—Relation Between Percentage of Silicon in Metal and Metal Temperatures

Southern furnace. From Table II and VI and Fig. 1 it may be seen that the temperature of the slag does not increase with blast temperature.

#### Comparison of Hearth Temperatures with Various Practices

Table III gives a comparison of hearth temperatures according to various practices, including the results obtained from the study herein reported. The comparison indicates that the temperatures in the hearth of the Southern furnace are much lower than those reported in foundry, Bessemer or basic practice in the North. The tuyeres were found to have a temperature of 125 deg. Cent. higher than the temperature of the slag, and the metal was 24 deg. Cent. lower than the slag. These differences are comparable with those found for other furnaces, but the actual temperatures are lower.

#### Relation Between Silicon Content of Metal and Temperature

The results shown in Table I for silicon content of metal and temperatures of metal have been plotted in Fig. 2. The relation has previously been pointed out, and seems to be borne out in this case—that is, an increase in silicon content with an increase in metal temperature.

\*Johnson, J. E., Jr., "Principles, Operation and Products of the Blast Furnace," 1918, McGraw-Hill Book Co., New York.

A number of iron producers have been interested in the control of carbon and other elements in the metal, and in this investigation one organization ran a series of temperature tests to obtain the variation in temperature of the metal during a cast. Similar data were made available during these tests, and the variation in temperature during three casts is shown in Table IV and Fig. 3. The middle of the three casts shows an average increase of 24 deg. Cent. above the temperature at the beginning of the cast. The highest temperatures were noticed when the slag began to flow from the iron notch. All metal temperatures were taken below the dam, where the metal was free of slag. Care was taken not to mistake slag for metal.

#### Tuyere, Metal, Slag, Blast and Top Temperatures During an 8-Hr. Period

As average results from observations taken over a number of days are likely to mask some of the existing

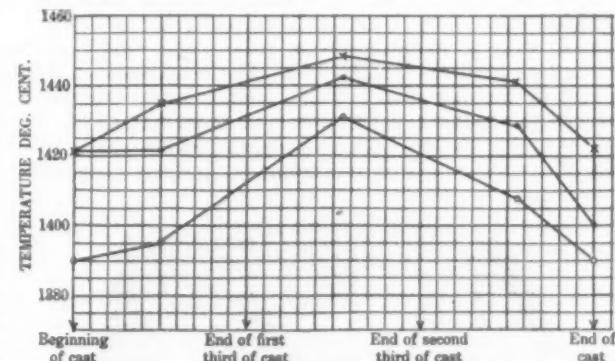


Fig. 3—Variation in Metal Temperature During Cast

relations, it was thought desirable to make observations over a period of one day. These results are shown in Table V and Fig. 4. They show in concrete form some rather interesting features in furnace operation, and indicate how quickly a furnace may shift from normal to abnormal working condition. [Numerous individual readings under each heading were given in the table as prepared; due to lack of space, only the maxima, minima and averages are given here.]

To all outward appearance the furnace was in normal condition when observations were started at 8 a. m. Observations taken at 9 a. m. show this to be true. Three flushes before cast were hot, white and normal. The metal at 11:30 a. m. was normal in temperature, but was high in sulphur (0.058 per cent). This might be taken as an indication of a changing condition in the hearth. From 9 a. m. until cast time the blast temperature had been decreasing; this was accompanied by an increase in top temperature. The effect of these

(Continued on page 514)

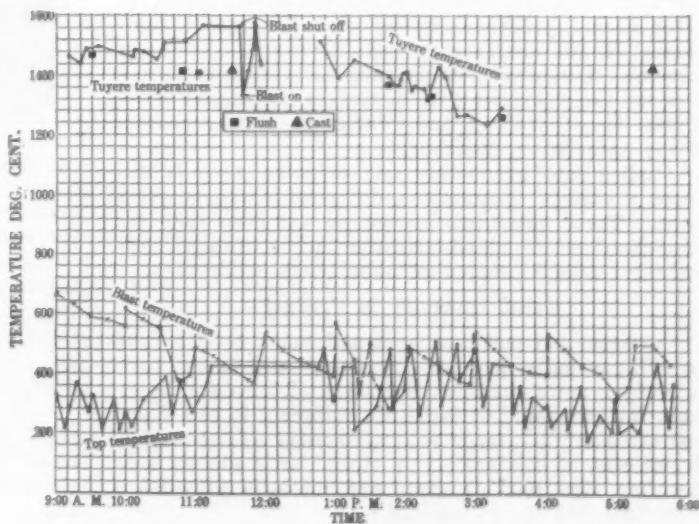


Fig. 4—Tuyere, Metal, Slag, Blast and Top Temperatures for an 8-Hr. Period on a Southern Furnace

# Standard Boxes for Packing Bolts

## Large Savings Estimated from Use of Sub-Multiples of a Unit Size, All Fitting Snugly Into Packing Case

WASHINGTON, Aug. 17.—Effecting a radical change in the method of packing bolts, nuts and rivets, and large savings to the industry and consumers alike, a system has been developed for the shipping and sale of these products on a package and weight basis instead of by count. The scope of this proposal can be more readily comprehended when it is estimated that there are 25,000,000,000 bolts, nuts and rivets, representing 1,250,000 tons of steel, produced annually in the United States, with a manufacturing sale value which has reached as high as \$187,000,000. The estimated saving in cost by the new plan is \$12,000,000, a matter of vital concern to producer, distributor and consumer alike.

The question has been opened up recently as a result of studies made of the industry, and the proposed

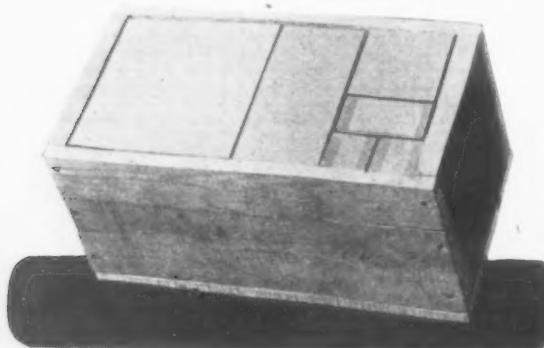
est cubical space; another, the necessity of packing in a manner which would prevent shifting of the product in transit. Such shifting often resulted in broken packages and complaints from buyers. Packing costs ranged from 2½ to 7½ per cent, and the problem was made more acute by the high cost of lumber, high transportation rates, expensive labor charges in packing, high overhead storage charges and other items.

In their studies the committee found that one manufacturer had designed some 60 sizes of containers to handle shipments. This met the problem in one direction, but held a disadvantage in the expense of carrying such a variety of containers in stock. Other manufacturers had reduced the variety of containers and cartons they used to a few sizes. Here another disadvantage showed up. It was found that there was much waste space in the containers, which permitted shifting of the material in transit, resulting in frequent breakage of packages. In some cases this waste space amounted to more than 30 per cent; in others, it ranged from 13 to 15 per cent, and represented 56c. to 58c. a ton of shipping weight.

### Avoiding Excess Air Space

Overcoming the expense of shipping cases which held so much empty space was a real task. Out of its deliberations, there was presented by Mr. Plumb a plan which was a radical departure from any course hitherto followed.

Briefly, this plan applied to carriage bolts, machine bolts and coach screws 6 in. long or less. It did away with the present system of basing the sales on decimal count and proposed the alternative of filling the packages to capacity. It proposed the use of five sizes of cartons, of sizes which would permit packing in multiples or combinations for a standard case. By this proposed size arrangement of cartons, two of the small-



*Standardized Cartons May Be Packed into Standard Cases Without Waste Space. Selection of sizes or all of one size may be packed. In the next column a different selection is shown*

new method of packing is being considered by it in cooperation with the Division of Simplified Practice, Department of Commerce. The primary object of these studies was to reduce the variety of containers for shipping and to secure economies in handling, packing, warehousing and shipping.

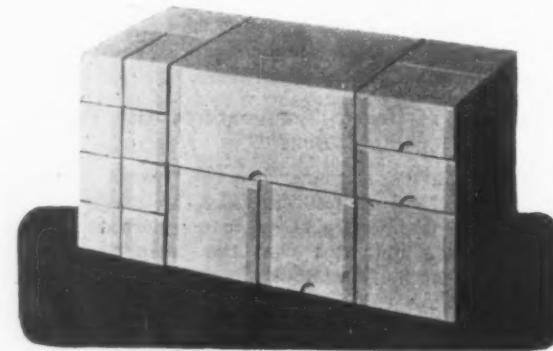
Some months ago the investigations were begun through the Bolt, Nut and Rivet Manufacturers' Association, which asked cooperation of the Division of Simplified Practice in improving packing methods and in devising some plan for standardizing these methods. The manufacturers named a committee consisting of Ralph Plumb, president, Buffalo Bolt Co., North Tonawanda, N. Y., chairman; J. H. Edmonds, Bethlehem Steel Co., Bethlehem, Pa.; George S. Case, Lamson & Sessions Co., Cleveland; A. K. Graham, National Screw & Mfg. Co., Cleveland, and Charles M. Best, secretary of the association, Pittsburgh.

Studies into production and shipping records disclosed a variety of practices, differing in nearly every plant. These practices proved so complex that the simplification or standardization of containers and packing methods seemed an almost impossible task.

### Great Diversity in Product

Carriage and machine bolts and coach screws, used by millions daily, are conservatively said to be made in 2000 or more varieties and sizes. To reduce manufacturing costs and to facilitate shipment it was found that the manufacturer is obliged to carry approximately 50 per cent of this variety in stock. It is plainly seen therefore that packing costs and methods provided a great task for the committee.

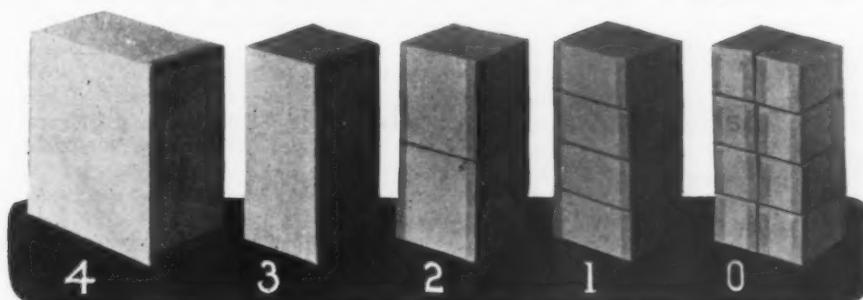
One problem common to all was the necessity of shipping the product so that it would occupy the small-



est size cartons were equal in size to one of the next larger. Doubling the size of the second for the third size, etc. These five sizes, it was declared, would care for all needs in the varieties mentioned.

Under this system it was provided that every container and carton be filled to capacity, no matter what the size bolt may be. While this, of course, necessitates odd quantities in a carton, the difficulty of waste space was overcome, and each carton is filled with a definite weight.

At present the number of bolts or nuts to a carton is 25, 50 or 100. To get averages of wastes in packing under this system, a carton was filled with 100 carriage bolts. Another was filled with the same item, but to its capacity. Counts showed that the second carton held 50 pieces more than the first, and overcame the 33½ per cent of waste space. It was shown further



**Proposed Multiple Units.**  
Each Fitting Into the  
Next Greater Size, Until  
All Are Encased in a  
Wooden Box. This plan  
permits nesting cases of  
bolts, nuts and rivets in  
small or large needs to  
meet varying requirements,  
saves space and  
transportation costs and  
eliminates other waste

that filling the second carton took no longer than did that of the first. Hence the packer filling the cases will handle just as many completely filled cartons as when they were but two-thirds filled.

In behalf of this plan, it is declared that, in actual practice, few users order their exact numerical require-

#### Six Proposed Standard Sizes of Cartons

No.	Inside Dimensions*			Outside Dimensions*			Capacity Lb.
	Deep	Long	Wide	Deep	Long	Wide	
0	1 1/2	3 1/2	1 1/4	1 1/2	3 1/2	1 1/4	5
1	1 1/2	3 1/2	3 1/4	1 1/2	3 1/2	3 1/4	11 1/4
2	2 1/2	3 1/2	3 1/2	3 1/2	3 1/2	3 1/2	2 1/2
3	3 1/2	7 1/8	3 1/2	3 1/2	7 1/8	3 1/2	5
4	3 1/2	7 1/8	7 1/8	3 1/2	7 1/8	7 1/8	10
5	7	7 1/8	7 1/8	7 1/8	7 1/8	7 1/8	20

\* Inches.

ments, but rather order the nearest decimal unit of measurement to the number required. The practice of ordering by decimal count, it is pointed out, has grown up through custom rather than through any inherent need. As for ordering under the full carton system, it is asserted that the customer can order the nearest number by weight, carton or case, and will achieve just as uniform a result for his purpose. For instance, the customer who previously ordered 2000  $\frac{1}{4}$  x  $2\frac{1}{2}$  in. carriage bolts would order a case of this size, and would receive 2160 bolts.

#### Full Cartons a Feature

Great care has been exercised by the committee members working on this plan, to determine the quantities in the full carton, and these, in the case of carriage bolts, range from 220 per carton for  $\frac{1}{4}$  x  $\frac{1}{2}$  in. carriage bolts up to 80 of the  $\frac{1}{4}$  x 6 in. size. The number of cartons per case ranges from 12 to 40. And the net weight per case ranges from 55 to 181 lb. The latter factor—the size of the case—was also a matter of careful study, and it was determined that 200 lb. or less would be the maximum weight that could conveniently be handled by one man. Efforts were made also to provide that the case should cost the same per ton of shipment, and 18 sizes of cases were designed to cover the entire range.

Another factor entering into the studies was to determine upon quantities in a case which should be

small enough to meet the requirements of at least 50 per cent of the total number of buyers. Under the proposed multiple system of cartons to make up the case, it is possible to pack a full case of one size, or to group a dozen combinations, as the sizes chosen were adapted for just such requirements.

The advantages of the proposed multiple system are summed up as follows:

1. It will materially reduce the number of sizes of cartons or packages needed to handle all classes of product.
2. It will assure the packages arriving at their destination in first-class condition.
3. It will prevent waste space, both in the carton and in the cases; and this, in turn, will reduce the cost of cases or containers per ton of shipment.
4. A full case, or of one size to the case, will eliminate considerable handling, and will reduce

#### Eighteen Suggested Packing Case Sizes (Inches)

Box No.	Depth	Length	Width
1	7 1/2	7 1/2	7 1/2
2	7 1/2	11 1/8	7 1/2
3	7 1/2	14 1/8	7 1/2
4	7 1/2	18 1/4	7 1/2
5	7 1/2	14 1/4	11 1/4
6	7 1/2	14 1/4	14 1/4
6 1/2	7 1/2	22 1/4	11 1/4
7	7 1/2	18 1/4	14 1/4
8	11 1/8	14 1/4	14 1/4
Box No.	Depth	Length	Width
9	7 1/2	29 1/4	14 1/4
9 1/2	11 1/8	18 1/4	14 1/4
10	11 1/8	22 1/4	14 1/4
11	11 1/8	29 1/4	14 1/4
12	14 1/4	25 1/4	14 1/4
13	11 1/8	36 1/4	14 1/4
14	14 1/4	29 1/4	14 1/4
15	14 1/4	32 1/4	14 1/4
16	14 1/4	36 1/4	14 1/4

Numbers 1 to 7 inclusive call for  $\frac{3}{4}$ -in. sides, tops and bottoms,  $\frac{1}{8}$ -in. ends and no cleats.

Numbers 8 and 9 call for  $\frac{3}{4}$ -in. sides, tops and bottoms,  $\frac{1}{8}$ -in. ends and  $\frac{1}{8}$ -in. cleats.

Numbers above 9 may be made in  $\frac{1}{2}$  or  $\frac{5}{8}$ -in. material, according to indicated weight of contents.

the storage space necessary for finished stock, whether for manufacturer, jobber or dealer.

5. The carton and case list will not only compensate the manufacturer for the extra cost of packing numerous sizes to the case, but will also avoid the necessity of charging against the full case buyer at least part of the present cost of

**Proposed standard packing affects 25,000,000,000 bolts, nuts and rivets, or 1,250,000 tons of steel, produced annually by American plants, with sales value of (perhaps) \$187,000,000.**  
**Standard packing would effect:**

*Change from sales practice on count or weight basis to package basis.*

*Economy, by reducing variety of containers for shipping, together with saving in handling, packing, warehousing, estimated at \$12,000,000.*

*Elimination of waste space in containers for these products, now ranging from 13 per cent to 30 per cent and more, representing 56c. to 58c. a ton of shipping weight.*

*Under proposed packing system a definite number of bolts, nuts or rivets would be contained in each packing unit, compactly filled, while at present the number of bolts or nuts to a carton is 25, 50 or 100, sometimes resulting in lost space of 33 1/3 per cent.*

August 20, 1925

mixed case packing, which is not less than \$5 per ton.

6. By establishing a standard quantity for each size of material per case, the confusion will be avoided which now arises from each manufacturer using different full case lists—a matter of importance to the buyer.

Further examples of the investigations by the committee are worthy of brief notice. One manufacturer reported that he used but four sizes of packing cases. One of the four sizes of cases was selected,  $11\frac{1}{2} \times 11\frac{1}{2} \times 32$  in., having a cubical content of 4232 cu. in. The first item packed was a number of  $\frac{1}{2} \times 6\frac{1}{2}$  in. carriage bolts wrapped in paper packages. This showed 578 cu. in. of waste or vacant space, or 13 $\frac{1}{2}$  per cent. This waste space was worth 8.4c. per case, or 56c. a ton of shipping weight. Next, the same case was packed with  $\frac{1}{4} \times 6$  in. carriage bolts, and showed a waste of 648 cu. in. to the case, or a money value of 9.6c. a case or 58c. a ton of shipping weight.

Another instance was that of a manufacturer who packs 93 varieties of carriage bolts in one standard case. These range from  $\frac{1}{4}$  up to  $\frac{5}{8} \times 6$  in. in size. The maximum weight that these cases will contain is 234 lb. The weight of the smallest size bolts per case is but 140 lb. In other words, this standard case, packed for shipment, weighs anywhere from 140 to 234 lb. and has an average space wastage in weight amounting to 20 per cent.

Hence the committee, spurred on by their findings, is bearing in mind that Secretary Hoover told the National Distribution Conference early this year: "There are wastes in transportation for which the shipper is responsible—wastes of partial car loading wastes of bad packing." They probably aggregate half a billion a year over what we could do if we did it better."

And the committee is considering most seriously from all angles the question: "Shall the 25 billion

Comparative Quantities by Carton and Case in Multiple Unit System

$\frac{1}{4} \times \frac{1}{2}$ Size of Bolt, in.	Number of Bolts in Carton No.	Number Cartons in Case	No. of Case	Number of Bolts in Case	Net Weight per case, lb.
1	220	12	2640	55	
$1\frac{1}{8}$	210	12	2520	55	
$1\frac{1}{4}$	200	12	2400	55	
$1\frac{3}{8}$	190	12	2280	55	
$1\frac{1}{2}$	180	12	2160	56	
$1\frac{5}{8}$	165	12	1980	55	
$1\frac{3}{4}$	150	16	2400	72	
$1\frac{7}{8}$	135	16	2160	68	
$1\frac{1}{2}$	120	40	4800	159	
$1\frac{1}{4}$	110	20	2200	76	
$1\frac{1}{8}$	110	20	2200	79	
2	100	40	4000	156	
$2\frac{1}{8}$	90	24	2160	91	
$2\frac{1}{4}$	160	24	3840	173	
$2\frac{3}{8}$	150	16	2400	115	
3	140	24	3360	171	
$3\frac{1}{8}$	130	16	2080	112	
$3\frac{1}{4}$	80	36	2880	164	
$3\frac{3}{4}$	80	20	1600	96	
4	80	36	2880	181	
$4\frac{1}{4}$	80	20	1600	106	
$4\frac{1}{2}$	80	32	2560	177	
$4\frac{5}{8}$	80	20	1600	115	
5	80	24	1920	144	
$5\frac{1}{4}$	80	16	1280	100	
$5\frac{1}{2}$	80	24	1920	156	
$5\frac{5}{8}$	80	16	1280	108	
6	80	20	1600	139	

bolts, nuts and rivets produced yearly in this country, at a sales value of some \$187,000,000, be sold on a basis of count, weight, or package? And shall the dictates of custom continue to make a contribution to the waste in transportation? Or is it time for a new system of merchandising to bring forth real economies to manufacturer, distributor and consumer?"

## Thirteen German Destroyers Salvaged

Use of Floating Dock Facilitates Work of Handling Ships Raised at Scapa Flow

WORK of raising the German warships in Scapa Flow, where they were scuttled in 1919, is proceeding apace, and the biggest salvage job the world has so far known is progressing satisfactorily and "according to plan." It will be recalled that this proposition is being tackled by Cox & Danks, Ltd., 168 Regent Street, London, and their scheme was more or less fully described in THE IRON AGE of Jan. 1.

When they had lifted and dumped six destroyers on the foreshore adjacent to their depot last October, they decided that there was more economic advantage to be gained in concentrating upon the disposal of these six boats, which were lying in a string on the beach, than to continue bringing in additional ships. There was no business sense in mobilizing a fleet of derelicts in Mill Bay, Scapa Flow. Imminence of winter weather, too, indicated the possibility of the next few ships taking longer time, with a consequent higher cost. The whole organization was therefore concentrated upon ship-breaking. Treachery in the Orkney weather is always to be looked for; and during November, December and January almost continuous 50 to 60 miles-an-hour gales, blizzards and snowstorms rendered even ship-breaking difficult. Isolated on the Island of Hoy, the men worked valiantly through, and a great deal of useful work was accomplished.

### Raised Destroyer Used as Aid

V70 was the first destroyer raised, on Aug. 1, 1924. A strange and perhaps romantic destiny was hers. She was soon patched up, made watertight, pumped free of water inside and taken around to the ship-breaking pier. Here her copper, brass and gunmetal were taken off, her boilers and engines cut out, her deck construc-

tion altered so that a steam traveling crane, pumping sets, etc., could be put aboard. This done, she was put into commission as a salvage ship working alongside her sister ships, pumping them out in Mill Bay, and doing useful work as a floating auxiliary in the task of refloating the vessels.

Oxy-acetylene and shears make short work of breaking up destroyers, and cargoes of steel scrap began to come southward to the Scottish works. Thus, units which went to the make-up of Admiral Tirpitz's fleet were losing their glamour in the melting furnaces.

### Work Resumed Early in Spring

Salvage started again in March this year when, in five days of reasonably fair weather following a blizzard and preceding a 50-mile gale, the docks crept out and brought in the H145 on March 14. This ship was in a badly holed condition, and was put in hand for breaking immediately. But she was a poor specimen of a ship from the ship-breaker's point of view. Built during the war, she was a striking example of economy in copper, brass and non-ferrous metals generally, and a tribute to German naval architecture in the utility of steel and iron and composite ferrous metals and the dispensing with the more valuable commodities. Even the bell was cast in iron. Fortunately for the financial aspect of the enterprise, she is the only one of this type so far salvaged.

Then a new difficulty arose. The next ship was found lying on its side with its mast intact. The floating docks were moored over the wreck as usual and, aided by divers, the ten lifting ropes of 9-in. circumference were placed underneath the hull, passing from one dock to the other. The ship was then in a

cradle of ropes. The first thing done was to take about half the weight of the ship upon the ropes. On one dock the ten winches began to haul in the ropes, while simultaneously the corresponding winches on the other dock paid out. The friction between the ropes and the skin of the ship was sufficient to bring the vessel to a vertical position without any parbuckling. The operation of righting was done in 6 hr. She was then lifted in the ordinary way and was beached in Mill Bay 2½ miles away in 5 days from the time the docks moved out. She was brought home on April 3 with her mast intact, and this latter gave some concern, as to whether it would pass clear of the bottom of the dock when the vessel was being turned over.

Followed the S36, also lying on her side, on April 18; the S138 on May 1; the S65, May 16; the S56, June

the dock. The lifting docks, freed of their burden, will clear, and the dry dock will lift the ship high and dry, where all necessary patching and repairs that may be necessary may be done in hours instead of days.

This section of the new dock is now (June 26) at the firm's ship-breaking depot at Queensborough, undergoing the necessary alterations. It will be ready to proceed on its towage northward about the middle of July. The idea, of course, is quite practicable, and the expense of taking it to Scapa will, it is estimated, be recoverable in the money saved after only two destroyers have been handled in the new method.

#### Large Ships Not Yet Tackled

Nothing actively is being done this year toward commencement on the Hindenburg and Seydlitz, al-

(At Right) Destroyer S-65 in Dock Between the Two Pontoons, After Being Raised from the Muddy Bottom



(At Left) Salvage Vessel V-70, ex-German Destroyer, Alongside Raised Destroyer S-138, in Mill Bay

5; the S32, June 19. Thus up to date thirteen destroyers have been secured, averaging two monthly.

#### Larger Floating Dock Available

A new development has occurred which may possibly quicken progress still further. The firm has purchased from the British Admiralty one of the two 40,000-ton floating docks surrendered by Germany. The other was recently transferred for use in the British naval base at Malta. One of the largest floating docks in the world, over 700 ft. long and 200 ft. broad, it is in six separate sections. Cox & Danks are carrying out certain alterations on one section, so that when one side-wall is cut clean away, and a 30-ft. square cut in the opposite wall, this one section will be towed up to Scapa Flow (700 miles). There it will be put into service as a dry dock.

When the lifting docks bring in a ship, instead of beaching it on the shore of Mill Bay, which, being tidal work, is somewhat lengthy and costly in time, the new dry dock will be submerged, and the lifting docks will place their prize on it, one end of the sunken ship being run through the aperture in the wall of the dock, and the whole weight being taken upon the pontoon of

though preparation for the provision of plant is being quietly considered in readiness for a start next spring, by which time all the 26 destroyers will have been recovered, if the same good results reward the firm's efforts as up to the present time, which is just the half-way point.

Note: Since the above story was prepared, four more destroyers have been raised at Scapa Flow, making a total of 17. The seventeenth vessel was raised Aug. 13.

Wholesale prices, according to the Bureau of Labor Statistics, Washington, advanced 1.6 per cent in July, registering 159.9, compared with 157.4 in June, on the basis of 100 as the average for 1913. Disregarding fractional changes, increases occurred in farm products, foods and miscellaneous items. Metal products at 126.4 formed the lowest figure of all, while cloths and clothing continued to hold the highest position with 188.8. Compared with a year ago the advance in general commodities is about 9 per cent. Metal decreased 3 per cent during that period.

## SAFETY IN JINGLES

Carnegie Company Arouses Interest by Using One per Week



NOVELTY in "getting over" the safety message has been developed by the Carnegie Steel Co. in its "Alphabetical Jingles," a photograph of a group of which appears here-with. These are built about the letters of the alphabet and make a poster or bulletin, 28 in. long and 10 in. wide, to fit the standard bulletin boards about the company plants. The letter is done in a brilliant red and the text matter is printed in the "safety" green, on a white paper stock, making a striking poster that is visible a considerable distance.

There is one for every letter of the alphabet and, with one displayed each week, the series covers 26 weeks or half a year. The text matter was composed especially for this work and with the thought of covering features especially applicable to the steel industry. While the bulletins are copyrighted by the Carnegie

Steel Co. they have been made available to other subsidiary companies of the Steel Corporation. The copyright was taken out to protect the plan and period of display by the Carnegie Steel Co.

In making up the text of the bulletins, resort was had to slang and the vernacular that would bring a smile as well as a thought that would stick, and the result has been all that could be desired. Reports from the plants state that these bulletins have aroused interest that is lasting, and in a number of instances have inspired the men to try their hand at jingle composition, based on experience and conditions in their own departments.

The first of these posters was displayed in the various plants of the company late in March and they are to run until the first week in October. No fewer than 1500 posters have gone out each week, to reach all employees of the company. To do this, the posters have been displayed in prominent places at the Homestead, Duquesne, Edgar Thomson, Pittsburgh, Youngstown, Mingo, Bellaire, New Castle and Farrell plants; in the shops and offices of the Union Railroad; in the plants and offices of the Pittsburgh Limestone Co. and the Universal Portland Cement Co., on the river boats of the company, at its warehouses in Pittsburgh, Newark, Baltimore, Boston and Cleveland, and in its general office building in Pittsburgh.

<b>A</b>	IS FOR ALPHABET: WE'RE FIRST TO BE HERE; WHERE, FOR SAFETY EACH WEEK, A NEW LETTER APPEARS.	<b>B</b>	FOR BLAST FURNACE WHERE OFT TIMES THERE'S GAS; WHEN WORKING AROUND THEM, HAVE NEAR A GAS MASK.	<b>C</b>	IS FOR CRANES THAT SWING LOADS IN THE AIR; WHEN YOU HEAR THE BELL RING, LOOK UP! HAVE A CARE!
<b>D</b>	IS FOR DANGERS WE MEET EVERY DAY; BUT ESCAPE WITHOUT HURT, WHEN SAFETY WE PLAY.	<b>E</b>	FOR ELECTRICITY BURNS WITH A "SIZZ"; DON'T TOUCH A WIRE, TIL YOU KNOW WHAT IT IS.	<b>F</b>	FOR THE FALLS THAT WE NEEDLESSLY GET; AND COULD EASILY AVOID, IF WE JUST WATCH OUR STEP.
<b>G</b>	IS FOR GOGGLES FOR SHIELDING THE EYE. USE 'EM WHEN WORKING, WHERE PARTICLES FLY.	<b>H</b>	IS FOR HOSPITAL WHERE QUICK YOU SHOULD GO, WITH THE SLIGHTEST OF HURTS; LEST MORE SERIOUS THEY GROW.	<b>I</b>	FOR THE IDIOT WHO STEPS ON THE GAS, HELL IS HIS HOME. JUST GIVE HIM A PASS.
<b>J</b>	IS FOR JACKASS WHO LEAVES THINGS AROUND; CAUSING OTHERS TO MEASURE THEIR LENGTH ON THE GROUND.	<b>K</b>	IS FOR KALE MAZUMA LONG GREEN; GETTING HURT TAKES IT ALL, THAT IS PLAIN TO BE SEEN.	<b>L</b>	FOR THE LADIE FULL OF HOT STUFF; TREAT IT WITH KINDNESS, DON'T TRY TO GET ROUGH.
<b>M</b>	FOR THE MINUTE YOU THINK YOU CAN SAVE, BUT YOU LAND ON A COT, AND DARN NEAR IN YOUR GRAVE.	<b>N</b>	FOR THE NUT DISREGARDING ALL CAUTION, THAT HE IS STILL LIVING, IS JUST HIS GOOD FORTUNE.	<b>O</b>	IS FOR OFTEN YOU'D TAKE THE SHORT WAY; BUT CAUTION PREVAILLED, SO YOU'RE WITH US TODAY.
<b>P</b>	IS FOR PLANT WHOSE SAFE RECORD YOU MAKE; GROWING BETTER AND BETTER; THE LESS CHANCES YOU TAKE.	<b>Q</b>	FOR THE QUACK WHO SAYS SAFETY IS "BUNK"; HE CAN'T TELL YOU WHY; HIS ARGUMENTS "PUNK".	<b>R</b>	IS FOR RADIO; THIS IS OUR SET. WE BROADCAST YOU SAFETY, WE HOPE YOU CAN GET.
<b>S</b>	IS FOR SAFETY; KEY NOTE OF OUR CREED. NOW LET'S PUT IT OVER; LET'S SHOW 'EM SOME SPEED.	<b>T</b>	IS FOR THINK THAT'S WHERE SAFETY BEGINS; AND USING YOUR "NOODLE" WILL SAVE MANY SINS.	<b>U</b>	FOR UNANIMOUS IN THEIR DECISION, THAT SAFETY'S THE "GOODS"; BY MEN WHO HAVE VISION.
<b>V</b>	IS FOR VACUUM, THE HEAD OF THE GUY, WHO SCOFFS AT OUR TALE, WONT GIVE SAFETY A TRY.	<b>W</b>	IS FOR WASTE OF LIFE, LIMB AND HEALTH; WHICH, BUT FOR THE CARELESS, COULD READILY BE WEALTH.	<b>X</b>	IS FOR TEN SPOT, WHOSE LOSS WE ALL DREAD; HOW MANY WE LOSE, WHEN WE'RE LAID UP IN BED?
<b>Y</b>	IS FOR YOU THE WHOLE CHEESE IN THIS SCRAP. IF YOU WILL PLAY SAFE, YOU WILL STAY ON THE MAP.	<b>Z</b>	IS FOR ZEUS, A GREEK GOD OF WAR. WHEN WE MADE SAFETY KING, OLD ZEUS GOT SORE.		

While Shown Here All 26 Together, the Cards Are Posted One Each Week and Each Remains on View for One Week. They are reported to have aroused much interest, largely from their amusing character, and to be quoted frequently by the men

# Recovering Tin from Tin Cans

## Description of the Electrolytic Process and Plant— Its Advantages Over the Chlorine and Open- Hearth Furnace Methods

BY ISMAR GINSBERG\*

**T**HREE are in general three methods employed in the detinning of metal. The first is known as electrolytic detinning, the second as detinning with the aid of chlorine, and the third as detinning in the open-hearth furnace. Each of these processes is peculiarly adapted to certain operating and economic conditions and can be used to best advantage in certain well defined cases.

### The Three Processes

The one tin-containing material, that forms the sole source of supply for the operation of these processes, is the empty tin can. Such waste material is, of course, available only in large cities or thickly populated districts. Consequently the plants at which the detinning is carried out must be advantageously located with respect to the sources of supply. The finished product, or rather the recovered tin, may be shipped anywhere, so that factory location is of little importance from this standpoint.

The chlorine process of detinning as well as the use of open-hearth furnaces can only be considered when the plant in which they are to be installed is a large one. Then, again, the chlorine process would only be used in those districts or countries where chlorine is being obtained as a by-product in some chemical process and is therefore comparatively cheap. Thus, for example, such a plant might be installed in the neighborhood of electrolytic caustic soda establishments and other electrolytic works where chlorine is derived as a by-product. It would not do to try to carry out the chlorine process at a point distant from the chlorine works and to which the chlorine would have to be shipped compressed in cylinders. The freight on the dead weight of the cylinders would be sufficient to render the process decidedly uneconomical.

The same conditions apply in a certain sense to the use of the open-hearth furnace for detinning. At any rate, this process is still somewhat in the experimental stage and could be carried out only in very large steel works, where large quantities of tinned metal would be available for detinning and also where the furnaces could be used for the manufacture of ingot iron and steel products when they were not being employed in detinning operations.

### The Electrolytic Process

But the electrolytic process of detinning does not possess any of the disadvantages of the other two processes. The only prerequisite is a source of cheap electricity, which is not difficult to fulfill. Therefore it is not necessary that an electrolytic detinning plant be a part of a large works. A small company can readily enough run such a plant without trouble.

Tin plate waste, which forms the principal raw material of the process, comes in very varied forms into the plant. The composition of the plate as well as the size of pieces of waste tin vary considerably. For example, the tin plate that is generally recovered in this country and England has a tin content of from 1.5 to 2 per cent. Tin plate waste of German origin contains frequently considerably less tin. The least desirable tin plate waste is that which has been subjected to partial rusting. A break may form in the metal and a particle of rust develop at that point. The rust will gradually penetrate under the coating of tin and in time will force it away from the underlying metallic surface. It is for this reason that it is advisable

to store the old tin cans and other tin plate waste in bins that are protected against the weather. It does not pay to work up tin plate which has become rusted, for the tin content of such material is very low. It is therefore advisable to examine the raw material with care before it is processed. It is, of course, a fact that the fatty and greasy materials that may be contained in the cans have a preservative action on the metal and prevent rusting. The paper labels which are stuck on to the sides of the can also have a similar action. Lacquered or painted cans are also much less subject to rusting.

One form of raw material which is particularly well suited for detinning is, of course, the waste that is obtained from the factories that make tin cans and other articles that are manufactured from tin plate. This waste material is not so bulky as the old tin cans, is generally not covered with rust and does not have to undergo so thorough a cleansing process as the old tin cans which contain fats, greases, sand, dirt and the like. Unfortunately, there is no large supply of such waste tin plate and it is not practical nor advisable to build a plant which will have to depend on its supply of raw material in this way. There is no other source of raw material for the detinning plant.

### The Reagents

The caustic soda used for preparing the electrolyte is of ordinary commercial variety. The liquor must contain between 8 and 10 per cent of NaOH. A plant that will handle from 3000 to 3500 tons of waste material a year, approximately 10 tons a day, is of the proper size to yield a profit on the undertaking. If it is figured that the average amount of tin that is recoverable is 1½ per cent, then this represents a production of 35 to 40 tons of tin yearly. In addition, there is, of course, the detinned metal. In working up the raw material a certain loss must be taken into consideration as brought about by the impurities that are smeared over and mixed with the tin cans. According to the amount of these impurities and the quantity of lacquers, etc., that are used in painting the cans, the weight of detinned plate or black plate, as it is generally called, varies around 94 to 96 per cent of the original weight.

### Arrangement of the Plant

There are in general six parts to the detinning plant. In the first place, there is the purification installation, which removes the impurities from the cans. There is then the electrolytic installation and the electric machinery used in running it; then the presses that pack the detinned plate into bales; then the lye regenerating plant; then the steam plant, and finally the storehouses, etc.

The cans must be very thoroughly cleaned; otherwise the impurities become mixed with the electrolytic baths and all sorts of difficulties arise in the actual detinning operation. The character of the impurities, as they may be called, varies very considerably in accordance to the purpose to which the can or container was put. Thus, for example, the cans used for sardines will contain a certain amount of lead solder, for these containers are not closed by fluting or grooving, but the covers are actually soldered to the can. Then, again, cans will contain rubber or pulp gaskets, colored labels, paints and lacquers, sand, dust, particles of decomposed food, etc. The fatty substances are removed by digestion with a solution of soda. The operation is car-

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ried out most simply in a tank which is provided with a false bottom, a heating arrangement and inlets and outlets for the digestion liquor. After treatment with the solution of lye, the cans are washed to recover the soda solution still remaining on them.

The electrolytic tanks may be of various dimensions and number according to the quantity of material treated. The electrical connections are ordinarily made so that four of the cells are connected in series and then three of such series of cells are connected in parallel. This makes a total of 12 cells. Above the cells there is placed a traveling lifting device which is used for raising and lowering the electrodes from the cells. Each cell has six iron cathodes and five anodes. The cathodes are made in sheet iron form and the anodes are really baskets in which the pressed cans are placed. The bottom of the baskets is made of sheet metal so as to prevent the particles and pieces of metal in them from falling out and producing short circuits.

The current is led into the cells through copper leads and is furnished by a direct current generator of 10 volts and 4000 amperes capacity. All the electrical apparatus should be located as close as possible to the cells, but while this is a condition which is desirable, still the damaging of the electrical apparatus by vapors of steam and acids which arise from the cells makes it more advisable to sacrifice a little convenience and locate the electrical apparatus, the generator, motor and switchboard in a separate room, but as close as possible to the cell house.

#### *Circulation of the Electrolyte*

One of the most important conditions which control satisfactory electrolytic detinning is the circulation of the electrolyte. The circulation of the liquor must be arranged for in such a manner that the entire contents of a cell are renewed once every hour. This means the removal and replacement of about four cubic meters. The electrolyte is made to flow into the cells through suitable piping, such as earthenware, and the incoming liquor is distributed through the bottom of the tank. The liquor then overflows at the top of the cell. This liquor is collected in earthenware channels and after being warmed up is used over again in the operation.

A word must be said about the concentration of the electrolyte, in this case sodium hydroxide, which is always an important consideration in all electrolytic operations. The carbon dioxide in the air has the effect of reducing the effectiveness of the electrolyte by combining with the soda to form the carbonate. When the concentration of the electrolyte is too low, then the duration of the detinning operation is prolonged. Care must therefore be taken at all times to see that the concentration of the liquor is satisfactory.

#### Cold Rolling Tests of Thin Iron and Steel

Comparative tests of open-hearth steel strip (deep-drawing stock) and electrolytic iron strip have been made at the Bureau of Standards, Washington, and a report is covered in technologic paper No. 288, which may be obtained from the Superintendent of Documents, Government Printing Office, Washington, for 10c. The tests made included hardness, Erichsen, tensile and bend tests on samples representing each step in the rolling.

Representative lots of the two types of material were cold rolled under identical conditions, to determine what difference, if any, could be traced. The material was rolled under both mild and very severe rolling practice. No evidence developed indicating any marked difference between the two types of material, but, in general, the tests indicated that electrolytic iron probably would be slightly superior to specially selected commercial open-hearth deep-drawing stock.

It was shown that electrolytic iron does not harden so rapidly and does not increase so rapidly in tensile strength under cold rolling as does open-hearth steel used for deep drawing. In all cases the tensile strength of the cold rolled material was greater in the direction transverse to rolling than in the direction parallel to rolling. The hardness was found to approach a max-

The electrolyte is circulated through the cells at a temperature of approximately 80 deg. C. The heating of the electrolyte is therefore of importance. This is best done by means of indirect steam, a system of coils being employed around which the liquor is allowed to circulate. Direct steam cannot be employed, for the reason that the condensed steam would dilute the liquor. It is advisable to employ a temperature regulator of the automatic type for this operation, so that the proper temperature will be maintained without the need of constant manipulation of the steam valves.

#### *Chemical Reactions*

The chemical reactions that take place during the electrolysis are simple but interesting. At the anode the tin is oxidized to the hydroxide, which is then dissolved by the caustic lye to give sodium stannate. The current decomposes this salt with the deposition of a tin slime at the cathode and a regeneration of sodium hydroxide. The end of the electrolytic detinning process is observed by the brown color developed in the detinned sheet metal which is recovered from this process. There is generally about one-tenth of 1 per cent of tin left in the black sheet metal after the process is concluded.

It is, of course, uneconomical to try and recover this small amount of tin that still remains in the form of an alloy of tin and iron. An important consideration, as has been explained before, is the purity of the electrolyte. The purer the liquor the more rapid the deposition of tin on the cathode. On the other hand, in practice it is generally found that the tin deposits in the form of a spongy mass. When the electrolyte is very impure, it is deposited in the form of a precipitate. In that condition the tin is obtained in the form of an oxide and sinks to the bottom of the cell.

Local conditions in any electrolytic detinning plant will control the length of time that the electrolyte can be used. In general all the liquor must be renewed at least once every two weeks. A certain amount of the liquor is continually removed from circulation and purified, being replaced by fresh liquor. The liquor is analyzed to find out its content of carbon dioxide and then sufficient of the gas is added to convert the hydroxide into the carbonate which results in a precipitation of sodium stannate, forming, on the one hand, sodium carbonate and, on the other, tin oxide. The latter is recovered by filtering and washing. The carbonate lye is then causticized in the usual manner with the aid of milk of lime to give again the hydroxide. The fresh hydroxide is then added to the electrolyte in the required amounts.

In preparing this paper the author is indebted, among other sources, to an excellent paper recently published on this subject in *Chemiker Zeitung*.

imum with increasing total reductions and then to decrease with further cold rolling. John R. Freeman, Jr., and R. D. France are the authors.

#### Metal Trade Labor Barometer Rises

Employment in 840 metal working shops reporting to the National Metal Trades Association, Chicago, showed an increase in July over June. June, in turn, had shown the first decrease of the year. The shops reporting to the association are located in New England, New York, Pennsylvania, Ohio, Indiana, Michigan, Wisconsin, Illinois, Iowa and Missouri, and had an enrollment of 588,782 employees in July, as compared with 584,965 in June, 590,210 in May, 589,372 in April, and 576,533 in March. The same shops reported 519,997 employees in June, 1924.

#### Second Furnace Planned at Granite City

The construction of a second blast furnace will be undertaken by the St. Louis Coke & Iron Co. at Granite City, Ill., as soon as the receivership of that organization is terminated. A reorganization plan has been perfected and it is now hoped that the company will get out of the hands of receivers by Oct. 1.

# Large Scale Screw Machine Output

Screw Slotter on Multiple-Spindle Automatic, Air Blast Separation of Work from Chips and Other Features Facilitate Production—  
Unusual Accuracy Maintained

BY L. S. LOVE

PRODUCTION of more than 117,600,000 finished parts is the performance in one year of the automatic screw products department of the National Cash Register Co., Dayton, Ohio. Noteworthy also are the accuracy limits maintained, the tolerance allowed being plus 0.0005 in., and minus 0.001 in.

The screw products department comprises 432 automatic screw machines, 412 of which are on one floor. The 20 additional machines are in an overflow section on another floor, this being made necessary because of the lack of room on the main floor. Screws, pins, counterwheels and other small duplicate parts required in the company's product are made from bar stock on these machines, the total number of different parts being approximately 9000. Work is standardized so that 143 men take care of the operation of the machines and an average day's run is 750,000 pieces, although a recent record day's run was 1,097,000 pieces. The bar stock used in one year totaled 1432 miles, weighing 4,650,000 lb. and ranging in size from 0.043 in. to

3 1/4 in. The scrap disposed of amounted to 2,400,000 lb. The machines in this department require seven miles of belting. The accuracy attained is attributed largely to the care and precision used in grinding the tools employed in the machines. A small machine shop is maintained in the automatic screw products department for quick repairs which are too small to require the services of the general machine division. It should be mentioned also that this department, contrary to the usual practice in the plant, is run on the day work basis instead of on piece work.

Among the several unusual devices and methods which facilitate the work of the screw products department is a screw slotting attachment employed on multiple-spindle automatics. This device, which the company was largely instrumental in developing, is approximately two and one-half times faster than a screw slotting attachment on single-spindle automatics in use in this shop. The action of the machine is functioned by a three-sided spider which picks the screw

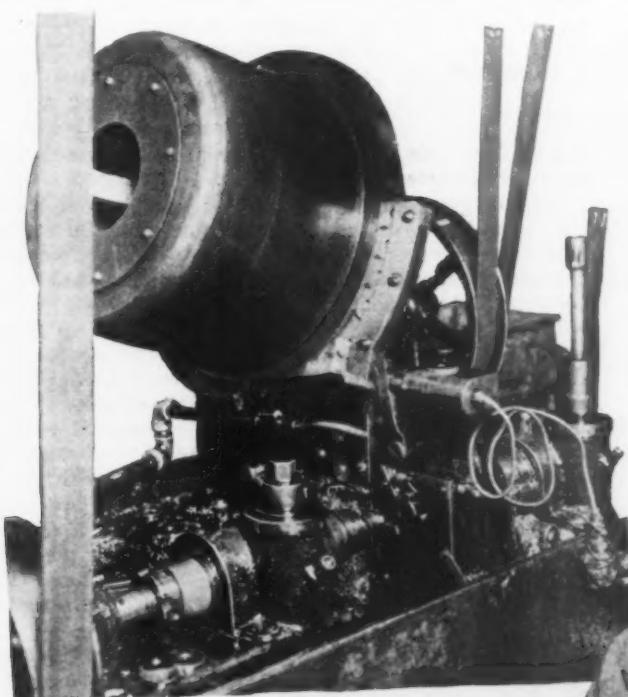


Fig. 3—On Second Operation Work Hoppers and Magazines Are Frequently Used in Conjunction. A floating air-operated chuck centers work to be burred



Fig. 1—The Use of an Air Blast in the Special Machine for Separating Work from Chips Is Effective on Both Large and Small Work

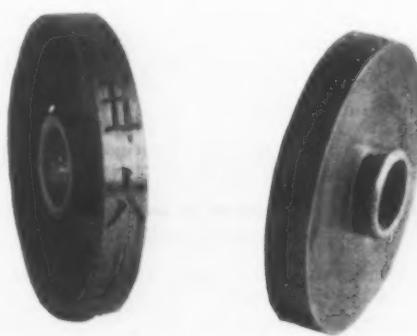


Fig. 2—Counter Wheels Are Knurled in Automatic Screw Machines With Characters in Various Languages

from the cutting-off operation and carries it up to the slitting saw.

A separating machine shown in Fig. 1 for removing work from the chips after the mass has been passed through the centrifugals that salvage the oil is also a feature of interest in this division. This machine, developed by the company, is arranged so that the work passes over a series of inclined planes which oscillate in the manner of a riddle. A blast of air is passed through it. As the riddle action separates the work from the chips, the former working to the bottom, the mass reaches the edge of an inclined plane and the air blast blows the chips one way, permitting the work to drop to the next lower plane. Several notches are provided in the air blast control mechanism so that work of various sizes can be handled with the proper amount of air for its weight.

A unique operation performed in the second operation division of the screw products department is the knurling or rolling in of the figures on the periphery of the reading wheels such as shown in Fig. 2. These wheels are made from brass rod. After the wheel has been drilled, counterbored, reamed, chamfered, etc., the knurling tool, made especially for the purpose in the cutter department, is advanced by the cross slide and rolls the figures in the wheel. The wheels drop from the machine at the rate of 20 a minute, and are subsequently silvered and the figure depressions filled in with black or other color.

#### Hoppers and Magazine Feeds Employed

Extensive use is made of magazine feeds and hoppers in conjunction with the automatic machines in the division devoted to second operation work. One operation on which magazine feed is used and which perhaps is of particular interest is the reaming and burring of gear blanks and ratchets. These pieces are loaded into a tumbler type hopper, as shown in Fig. 3,

which feeds them into a magazine. From the latter the pieces slide by gravity to an air-operated floating chuck which centers them with the reamer. Both sides of the hole in these pieces are chamfered, in addition to the reaming operation, at the rate of 7600 per 8-hr. day.

An automatic screw machine with magazine feed of the dial type, which holds 24 pieces and is saving 75 per cent of cost over hand machine method formerly used in the second operation division, is also of interest. The pieces handled by this machine are known as class No. 900 intermediate gear hubs, and the operation is drilling, reaming and facing both ends of the hub, the production being 80 per hour. Gray iron cams are also machined in automatics equipped with magazine feed. In the one operation the cams are drilled, the hub turned and one end faced and in the second operation the cam is reamed, finish turned and the other end faced.

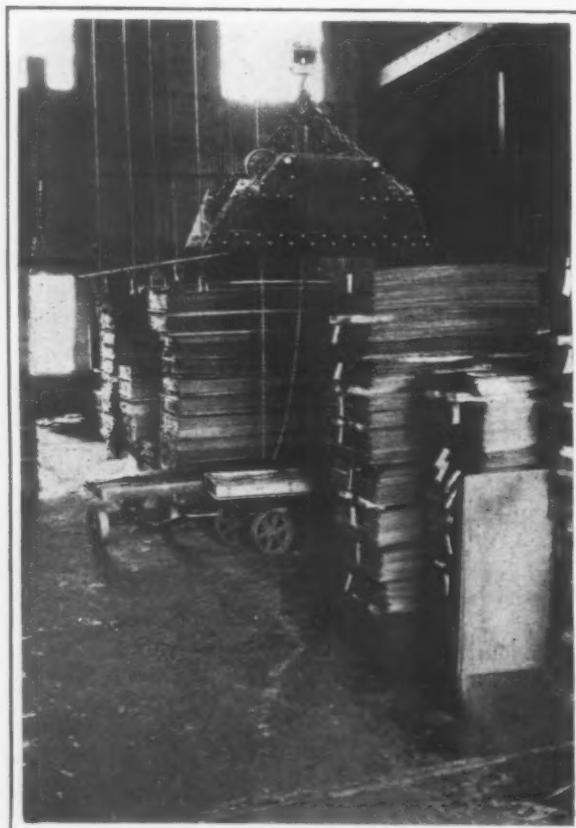
The burring of counterwheels is done on automatic screw machines with magazine feed. Two wheels are dropped at each revolution of the turret, the output being at the rate of 1000 an hour. The finished wheels are ejected from the machine by means of a push rod which operates through the spindle, air blast being employed to carry them to the tote boxes at the rear of the machine. A second operation on the counterwheels consists of facing, recessing, finish turning and knurling in the figures. This is done on a machine equipped with magazine feed, and the output is 45 counter wheels an hour.

The division devoted to second operations on screw machine work uses many hand screw machines, as many changes are required in set-ups due to small lot production, ranging from 25 to 1000 pieces per lot. Type wheel blanks are machined on hand screw equipment. These are bronze castings and are made in more than 200 different types.

## SAVES SPACE IN LIFTING

### Closer Stacking of Sheets Possible—Spilling of Loads Avoided

To make better use of space in the sheet stock room and to avoid spilling loads, a sheet handling device has been developed for use in its plant by the Heintz Mfg.



Co., Philadelphia, maker of stamped and assembled sheet metal parts.

At first glance the illustration might appear to show a more or less ordinary type of crane pan. On closer inspection, however, it may be seen to differ from the pan and from the usual type of sling hook used for handling plate or sheets.

There are two sides to the device, each hung from the crane hook by a chain from each upper corner. Along the lower edge of each side is riveted an angle or flange extending inward toward the other side. Each side may be likened to a plate hook of unusual width. At the top the two sides are connected by screws and turnbuckles, one set at each end. The turnbuckles are adjustable by handwheels.

After the flanges are slipped under the pile of sheets to be lifted, the turnbuckles are adjusted to prevent collapse of the rig from the pull of the chains. In this manner spills are prevented as the stack of sheets does not tend to buckle and slip off the hooks.

As the rig can be worked between stacks set close together, floor space is conserved to a marked extent. The lifting rig is suspended from a bridge crane which is controlled from the floor, a time saving feature, as the man operating the crane is close to the pile of sheets to be lifted and can more readily judge the amount the bridge, trolley or hoist should be moved. Sheets are deposited on trucks for delivery to a gate shear, where they are cut to required size as lifted from the truck, and after cutting are deposited on another truck for delivery to the proper position for the first press operation.

Annual savings, amounting to \$293,600,000, are estimated by the Department of Commerce to have followed the application of simplification systems by nine groups of producers.<sup>1</sup> The work is going forward on a great variety of projects. Some of those in the metal industry include automobile taper roller bearings, poppet valves, hot rolled steel in coils, power boilers and accessories, railroad shop tools, tacks and nails.

## PIG IRON FREIGHT RATES

## Revision Intended to Equalize Charges—Typical Cases Cited

WASHINGTON, Aug. 17.—Proposed increased import rates on ferromanganese, spiegeleisen and pig iron, in carloads, from South Atlantic and Gulf ports to Alabama City, Anniston, Attala, Birmingham and Gadsden, Ala., Alcoa, Chattanooga, Knoxville and Lenoir City, Tenn., and Atlanta, Ga., will be permitted by the Interstate Commerce Commission if the rates are made to apply from shipside. The commission made this clear in a decision last Saturday which found the proposed rates not justified, but this was due to the fact that the suspended schedules did not so apply. By reason of this the schedules were ordered cancelled "without prejudice to the establishment of the proposed rates if made to apply from shipside." The handling charge from shipside to car is 56c. per ton.

"With the provision that the rates apply from ship-side we feel that the proposed schedules have been justified," said the decision. Permission was given to the filing of tariffs on short notice, providing for the application of the rates from ship-side. Protest against the rates was made by the Chattanooga Manufacturers' Association, the Charleston Traffic Bureau and the Mobile Chamber of Commerce.

The schedules seek to establish import commodity rates from South Atlantic and Gulf ports to interior southern destinations where only domestic commodity rates or class rates now apply, and to increase the present import commodity rates to points where such rates are now published. They propose a higher level of rates on ferromanganese and spiegeleisen than on pig iron. The effect will be to reduce the rates to points where only domestic rates now apply and to increase them to points where import rates are in effect.

Under the southern classification ferromanganese, spiegeleisen and pig iron are rated the same and, where import commodity rates have been established from South Atlantic and Gulf ports to consuming centers such as Birmingham and Chattanooga, such rates are the same on all of these materials. The commission justifies higher rates on ferrromanganese and spiegel-eisen than on pig iron because of the greater value of the two alloys. It is stated that the present rates on pig iron in the South were made many years ago with a view to developing the furnaces in Alabama and Tennessee, and they have never been revised for the

## Bethlehem Denies Report of Indiana Plant

President Eugene G. Grace, Bethlehem Steel Corporation, has issued a formal denial of newspaper reports from Michigan City, Ind., that the company had purchased 2000 acres of land near there as a site for a steel plant.

#### Weirton Steel Co. Expansion Plans

Improvements and additions to the plant of the Weirton Steel Co., Weirton, W. Va., which have been under contemplation for some time, have now been definitely decided upon and detailed plans already are being worked out in the company's engineering department.

Beside the building of loading and unloading docks, plans for which are now complete and in the hands of river authorities for approval, the by-product coke plant will be enlarged by the addition of 45 ovens and another blast furnace will be built of the large type to produce an average of 800 tons of pig iron per day. Completion of this unit will give the company a total production of pig iron of 550,000 tons per year.

Three new 100-ton furnaces will be added to the open-hearth plant, bringing the capacity of that department up to 800,000 tons of ingots per annum.

purpose of curing fourth section (long-and-short-haul) departures. They were originally made on the old competitive base point system, the decision says, whereby rates to the junction points were depressed and those to intermediate points made higher.

Typical proposed import rates on ferromanganese, spiegeleisen and pig iron follow. The proposed rates to Alabama City, for instance, where only domestic commodity rates are published, show substantial reductions from the present basis. Taking Chattanooga, Tenn., as typical of the points to which import commodity rates now apply, it will be seen that the proposed rates invariably result in increases.

		Rates Per Gross Ton			
From	To	Spiegeleisen		Pig Iron	
		Present Rate	Pro- posed Rate	Pres- ent Rate	Pro- posed Rate
Charleston, S. C.					
Savannah, Ga...		*\$8.85	\$5.34	*\$8.85	\$4.95
Brunswick, Ga...		*8.85	5.34	*8.85	4.95
Jacksonville, Fla...		*8.85	5.34	*8.85	4.95
Pensacola, Fla...		*8.85	5.34	*8.85	4.95
Mobile, Ala.....		2.75	4.84	*8.06	4.45
New Orleans, La.		2.75	4.84	*8.06	4.45
Charleston, S. C.		3.25	5.34	*8.96	4.95
Savannah, Ga...		3.37	5.34	3.37	4.95
Brunswick, Ga...		3.37	5.34	3.37	4.95
Jacksonville, Fla...		3.37	5.34	3.37	4.95
Pensacola, Fla...		3.37	5.34	3.37	4.95
Mobile, Ala.....		2.75	4.49	*7.62	4.16
New Orleans, La.		2.75	4.49	2.75	4.16
Charleston, S. C.		3.25	4.49	3.25	4.66
Savannah, Ga...		3.37	5.34	3.37	4.95
Brunswick, Ga...		3.37	5.34	3.37	4.95
Jacksonville, Fla...		3.37	5.34	3.37	4.95
Pensacola, Fla...		3.37	5.34	3.37	4.95
Mobile, Ala.....		3.37	5.34	*8.74	4.95
New Orleans, La.		3.37	5.34	3.37	4.95
		3.37	5.34	3.87	4.95

\*Domestic commodity rate.

Comparative rates in North and South on ferromanganese, spiegeleisen and pig iron, showing the present rates in the South, are lower than in trunk line and central territories, where the rate level is normally lower than in the South and where the volume of movement is much heavier:

From		To	Miles	Present	Mills Per	Proposed	Mills Per
				\$3.37	Mile	\$4.99	Mile
				5.42	Per-Mile		Per-Mile
Savannah, Ga.....	Birmingham,						
	Ala. ....	421		3.37	7.7		
Pittsburgh, Pa....	Kankakee, Ill. ....	473		5.42	11.4		
<i>Spiegelaisen</i>							
New Orleans, La...	Chattanooga,						
	Tenn. ....	498		3.87	7.8	5.34	10.
Philadelphia, Pa...	Cleveland, Ohio	506		5.98	11.8		

Plans for the new tube mill are well under way and it is expected that construction will be started as soon as the company's engineers return from Germany.

The program calls for the installation of several sheet mills, making possible larger production and a wider range of sizes and grades.

Plans also have been approved for new storage yards at Weirton, to be served by overhead cranes having a capacity for 100,000 tons of scrap and pig iron.

#### **Buffalo Wire Works Expanding**

The Buffalo Wire Works Co., 316-336 Terrace, Buffalo, has again found it necessary to expand and has purchased the Jones Iron Works property at 308-314 Terrace. The new addition occupies an area of 85 ft. x 200 ft., giving the company 30,000 sq. ft. of floor space additional for the manufacture of wire products. The buildings are to be remodeled and reconstructed.

The fourth National Exposition of Power and Mechanical Engineering will be held in the Grand Central Palace, New York, from Nov. 30 through Dec. 5. A series of exhibits of heating and ventilating machinery will form an important addition to the lines usually represented. The managers of the show are Fred W. Payne and Charles F. Roth, with offices in the Grand Central Palace, New York.

## Fall Outlook for Iron and Steel Encouraging

## The Trend of Production Is Upward and Prices Are Slowly Reacting to the Continued High Consumption by Basic Industries

BY DR. LEWIS H. HANEY

Director, New York University Bureau of Business Research

THE trend of steel ingot production turned upward slightly in July. The actual tonnage, 3,087,600, decreased 4.7 per cent from June, but this was less than the usual seasonal decline, and the adjusted output was a little higher in July than for the previous month. Production for the month is estimated to be about 4 per cent over the normal requirement at this time of year.

Unfilled orders of the Steel Corporation, however, dropped more than is usual for the month and reached the lowest point since last October. At 3,539,000 tons the figure compares with 3,187,000 tons at the July bottom a year ago.

While steel production is only a little over normal, its trend is much above the trend of unfilled orders. The price of finished steel rarely rises while unfilled orders are declining.

It seems, therefore, that there is no probability of much, if any, advance in the average price of steel in the near future. If production expands very rapidly the possibility of a renewed weakness is evident. On the other hand, the rate of decline in unfilled orders is tapering off and should any sizable gain in unfilled tonnages be recorded within the next month or two, an upward swing in prices is not impossible.

While production of steel will probably increase, it will do so at a very moderate rate and unfilled orders are likely to show merely a nominal gain for the immediate future. Consequently, steel prices should hold at today's level for the next 30 days without much change.

Looking a little further ahead, the prospect is for a general improvement in business during the remainder of the year. Overcapacity and foreign competition will limit steel expansion, and no boom is to be expected; but before the year is over material gains in steel activity and slightly higher prices are probable.

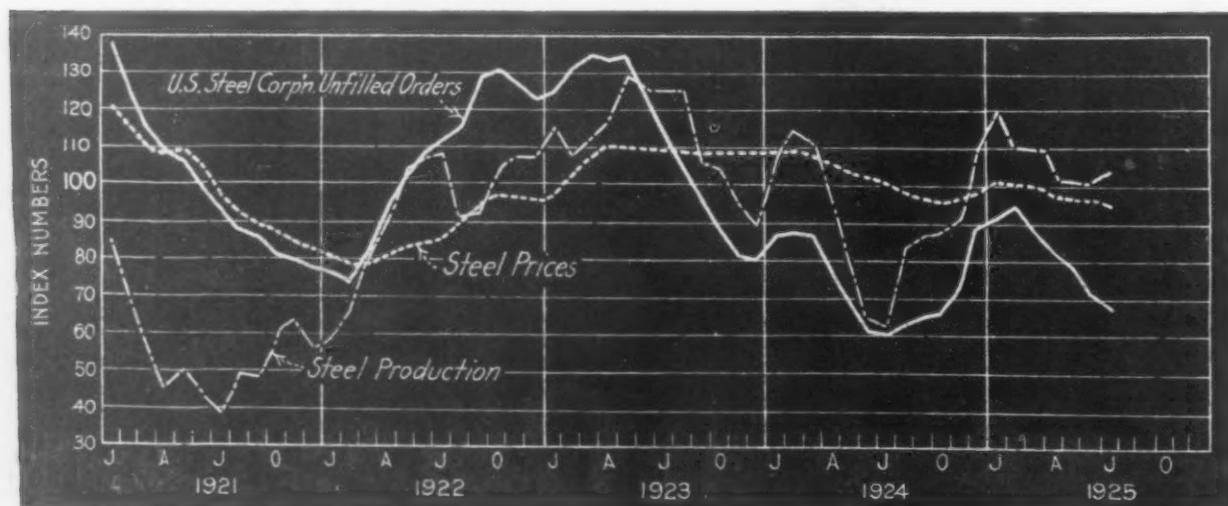
THE IRON AGE composite price of finished steel averaged lower in July than in June, and was, in fact, the lowest for any month since September, 1922.

## **Stronger Iron Markets**

AFTER allowing for long-time trend and the usual month-to-month variation, the production of pig iron in July showed a very small increase. Stocks of pig iron at merchant furnaces are probably declining slightly. The average price of pig iron as reflected in THE IRON AGE index was lower in July than in June. In fact, it was the lowest since March, 1922. But the downward movement of the monthly index has been tapering off, and recently a small rise has been registered.

The number of tons of pig iron produced in July amounted to 2,664,000, compared with 2,673,000 in June. This decrease is less than usually occurs, however, and our adjusted index, therefore, registered a gain, being 99.2 per cent of normal, against 98 per cent in June. In other words, the pig iron production in July is estimated to be nearly one per cent under normal requirements. Naturally, under these circumstances, stocks of pig iron at furnaces have been drawn upon. Stocks at foundry yards are reported generally low.

The outlook for pig iron prices seems clearer than in the case of steel. The probability is that from now on the pig iron markets will show greater firmness. Stocks are decreasing and the stock curve (which is drawn on an inverted scale) lies over the curve of production. This situation has nearly always forecast a rise in pig iron prices. With coke firmer, the chief factors now holding iron prices down are the lack of strength in steel and continued imports of foreign iron.



**Fig. 1—Steel Production Was About 4 Per Cent Above Normal in July; Unfilled Orders Lowest Since Last October**

## In This Issue

*Turn in steel prices not far off.*—Iron has advanced; price level of general commodities has gone up; fall business prospects are good: An upward movement in steel prices may be expected before cold weather.—Page 478.

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## The Iron Age and Its Readers

SOMETIMES a highly specialized organization, equipped to aid industry through solution of problems of manufacture, fails to achieve its due need of usefulness because of lack of knowledge on the part of industrial leaders of what that organization can do for them. In this case an effort should be made to bring the two together. Such a helpful institution is the metallurgical division of the Bureau of Standards in Washington. It has been performing valuable service, but it has the equipment and the will to do more.

On other pages is a portion of the story of the aid which this division of our Government has been rendering to those who have been fore-handed enough to take advantage of their opportunities. Next week will be given, in detail, an account of the main lines of work now under way and of the progress which has been made.

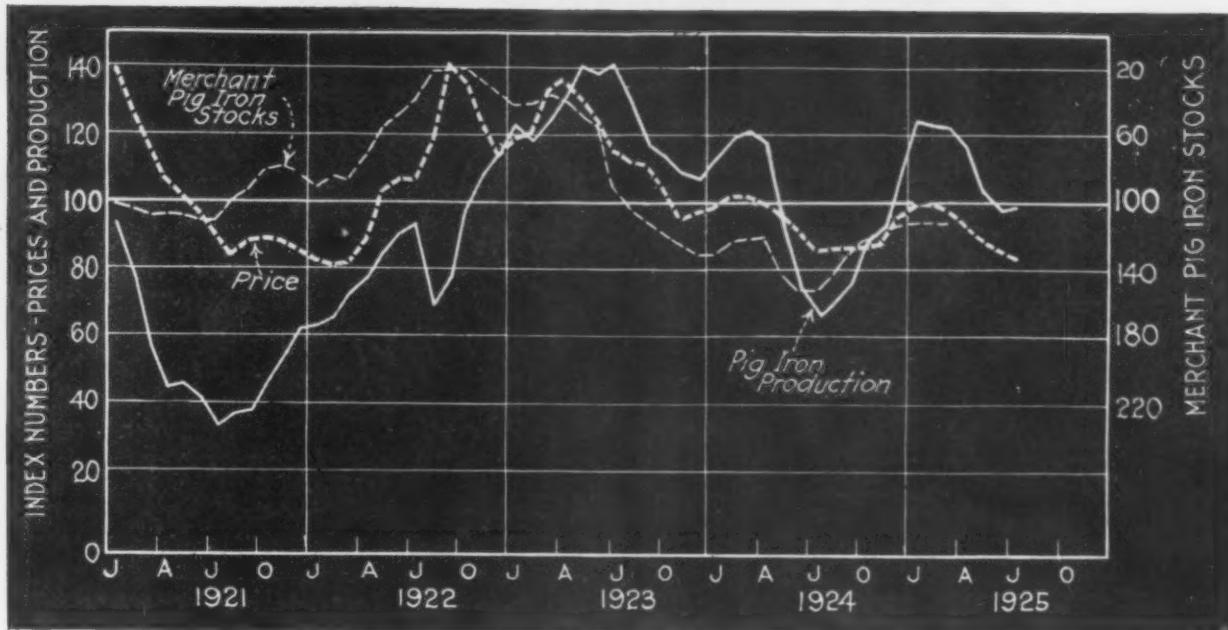


Fig. 2—Pig Iron Production Close to Normal; Stocks Probably Decreasing; Prices, Consequently, May Be Expected to Increase

### Rise in Commodity Prices

FIG. 3 shows the trend of Bradstreet's index of commodity prices along with THE IRON AGE indexes of finished steel, pig iron and scrap.

The general commodity index moved up 2.8 per cent during July and showed the third successive monthly increase.

The composite indexes of finished steel and pig iron prices moved down, but in both cases the decline was at a diminished rate.

The monthly average price of heavy melting scrap at Pittsburgh has shown an upward trend for two months in succession.

It is very clear that Bradstreet's index tends to anticipate the prices of iron and steel by several months, though the lead varies widely in amount. The price of scrap also frequently anticipates the trend of iron and steel prices. Judging by the past, therefore, higher iron and steel prices are to be expected. In the case of the average for finished steels, no early gains appear likely and it is quite possible that advances may be postponed till well toward the end of the year. In the case of iron, however, the indications of the graph are that advances will come sooner.

Sheets and nails have very nearly reached bottom levels and the decline in black sheets has clearly approached the limit.

The July price average for coke was a little higher than the June figure, and, as iron prices are somewhat below a normal relation to coke, it seems reasonably certain that iron will not sell at any lower figure.

### Summary

THE beginning of the turn in the iron and steel industry came in July, when production held up better than usual for the season. Prices are firmer, notably of iron. The weak spots are (1) small unfilled orders and (2) a steel output which is well up to or a little in excess of average requirements. Foreign competition is also a factor. Domestic consumption, however, continues large and should increase as business recovery becomes more pronounced.

For the future the probabilities are advancing iron prices and a steel market that will be barely firm. Scrap has gone ahead too fast, but, though some setbacks are not improbable, the underlying tendency is toward higher levels. Iron and steel production will increase.

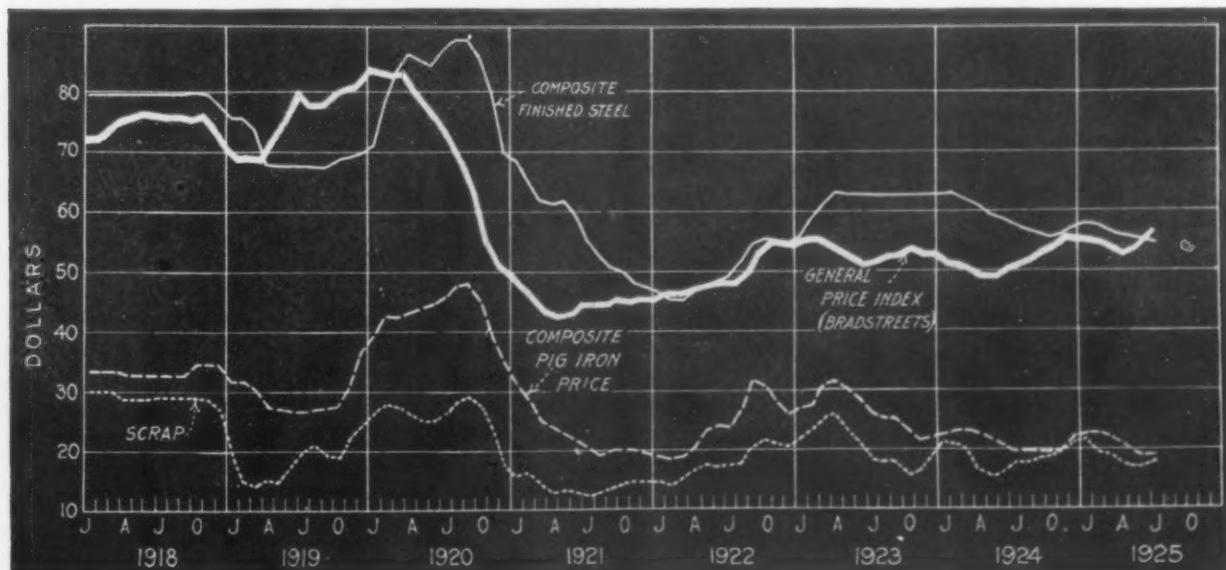


Fig. 3—Recent Rise in Bradstreet's Commodity Price Index May Indicate Advance in Iron and Steel Prices

ESTABLISHED 1855

# THE IRON AGE

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Member of the Audit Bureau of Circulations and of  
Associated Business Papers, Inc.

Published every Thursday by the IRON AGE PUBLISHING CO., 239 West 39th Street, New York

C. S. BAUR, *General Advertising Manager*

F. J. Frank, *President*

Owned by the United Publishers Corporation, 239 West 39th Street, New York. Charles G. Phillips, Pres. A. C. Pearson, Vice-Pres. F. J. Frank, Treas. H. J. Redfield, Secy.

BRANCH OFFICES—Chicago: Otis Building. Pittsburgh: Park Building. Boston: 425 Park Square Building. Philadelphia: 1402 Widener Building. Cleveland: Guardian

Building. Detroit: 7338 Woodward Ave. Cincinnati: First National Bank Bldg. Buffalo: 833 Ellicott Square. Washington: 536 Investment Building. San Francisco: 320 Market St. London, Eng.: 11 Haymarket S.W.1. Subscription Price. United States and Possessions, Mexico, Cuba, \$6.00; Canada, \$8.50; Foreign, \$12.00 per year. Single copy 25 cents.

Entered as second-class matter, June 18, 1879, at the Post Office at New York, N. Y., under the Act of March 3, 1879.

PRINTED IN U. S. A.

George H. Griffiths, *Secretary*

## Much in the Point of View

THERE IS something humorous in the starting of investigations of the gasoline price by States, municipalities and committees, at the very time when the refiners have been cutting prices, when petroleum securities in Wall Street have been slumping, and when investors who put their money into tanks, pipe lines and refineries at three times present liquidation values have lost hope that they will ever see their money back. None of the thousands of people who did that will do aught but shed tears over the present low price for gasoline.

Let those who think that the present price for gasoline is too high, and that they are being stung by some "interests," buy a few shares of oil stock. Standards of various kinds, Texas, Marland, Sinclair, no matter which. With the advent of a million buyers for shares the stock market would rise and all stockholders would be happy. The consumer at 30 cents per gallon, if he were a stockholder, would also be happy when he received his dividend check. What could be more simple? Why go to Florida to speculate in real estate when a better opportunity is right at hand? All that is needed is organization; the organized buying of oil stocks. This would make 30-cent gasoline a pleasure, just as \$40 tires are regarded cheerfully by stockholders in the rubber companies. It is merely a matter of the point of view.

The municipal transportation of the city of Boston is practically nationalized; that is, the operation is under the supervision of the State, with a guarantee of a return on their investment to the private owners of the property. If the trustees are unable to make both ends meet the deficit has to be made good, either out of the public treasury or by raising fares. A wage controversy is now in process of arbitration, the State being, of course, a participant, and has been of much economic interest.

It has been established that, exclusive of overtime, the average wage of Boston carmen in 1924 was \$6 per day. Let us say \$1,800 per year. For

the 45 million workers of the country to receive so much there would have had to be a national income of 81 billion dollars, but in fact it was only about 70 billion. Consequently these men were doing excellently as it was. Their business agent testified, however, that they ought to get \$2,836. He was honest enough to explain that that figure did not represent their actual living expense, but rather what these men thought they ought to get in order to house, feed and clothe their families properly. He was franker than the locomotive engineer whom we heard declare that he could not possibly live on less than \$12 per day.

Well, from the 45 million workers, deduct all the farmers, all the employers, all the salaried managers, superintendents and foremen. There is a residue of 30 million town workers. Multiply \$2,836 by 30 million. The product is 85 billion. And a national income of 70! For all, it simply can not be done, and for a single class it ought not.

The point of view of these workers is reminiscent of a story attributed to William H. Vanderbilt. Inquiring about a friend lately deceased, he was informed that an estate of half a million dollars had been left. "Too bad," remarked Mr. Vanderbilt, sincerely expressing his sorrow. "I always thought that Robinson was in comfortable circumstances."

## Russia Buying More Here

DURING ONE of the Russian famines, when American wheat and corn were being rushed into the Volga valley and the Caucasus, a group of ten Americans reached Moscow. They brought no food. They had no funds. Yet they were welcome, for they were tractor experts, come to teach the young Russian idea how to plow.

This was not the first time that machine farming had been tried in Russia. German and American farm equipment builders had been selling to Russia for years. But it was the first attempt in an organized way to teach the landowning peasant how to make the most of his opportunity

and stave off the specter of starvation which long had haunted the lands of the Slav.

Since then many Americans have gone to Russia in the interest of modern machine farming. Tractors and reapers and gang plows have been shipped yonder to fight the periodic famine. This year, according to reports, there will be a good harvest in Russia, and both Russia and the United States will profit thereby. During the first half of this year, for example, Russia bought in this country more than twice as much farm machinery as in all of 1924. The total for the current year should come close to \$7,000,000, according to the showing for the first six months.

Other manufacturers of American machinery are also getting their share of the increased business coming from the federated soviet union. Oil well machinery sales for the first half of this year were larger than for the whole of 1924. Other forms of machinery were taken in about the same proportion. In all, \$5,400,000 worth of machinery has been bought in six months. Purchases of metals here ran to \$800,000 for the first half year; in the twelve months of 1924 the total was less than \$300,000. Automotive orders were valued at \$630,000 for the January-June period, compared with \$250,000 for the whole of 1924.

Moreover, orders this year have been largely for machines, instead of replacements and parts as was the case a year ago. The chief buying agency of the soviets predicts even larger orders for the next half year. Thus the bear that walks like a man is beginning to do business like a man.

### Warnings Against Inflation

**L**AELY some warnings of the dangers of "inflation" have appeared, such as were so widespread early this year. One cannot say positively whether those warnings of six and seven months ago were unfounded or were heeded, the record being simply that the inflation did not proceed.

It is no wonder business is alert and sensitive on this subject. Price advances are distasteful to many and deflation after inflation is painful to all. The present generation will hardly lose the memory of 1921.

Certainly the warnings are healthful. There is not the restraining influence in the minds of buyers that there was before the war, for buyers have grown more used to changes. Before the war sellers had to be conservative and cautious because buyers had very definite and precise ideas of what were normal and natural prices.

The difference in the extent of price swings since the war and before the war is brought out by the following figures, which show for six years before the war and six years after the war the percentage change, from the preceding year, in commodity prices at wholesale as given in Bureau of Labor compilations:

#### Commodity Price Changes

	1908	—4	1919	.....	+9
1909.	.....	+8	1920.	.....	+7
1910.	.....	+4	1921.	.....	-35
1911.	.....	-8	1922.	.....	+1
1912.	.....	+6	1923.	.....	+3
1913.	.....	+1	1924.	.....	-3

Thus the first three years after the war showed

a wide swing, while the last three years have been much like those before the war.

Before discussing whether we are trending to inflation there should be careful consideration of just what the conditions are now. It is not sufficient to say that a given index number is the highest since so many months or years ago. How much is it higher, or is there any sharp turn in the curve? Study of the Bureau of Labor's index numbers suggests that if there is much inflationary tendency it must be found outside of commodity prices at wholesale. The public has come to think of "inflation" as a reduction in the average buying power of its dollar, and "deflation" as the reverse. If one commodity goes up and another goes down, in such a way that the weighted average does not change, then the average purchasing power of the dollar has not changed.

One sees, in the Bureau of Labor figures, that (with 1913 prices taken as 100) the past three years have averaged 149, 154 and 150 respectively. Monthly averages this year ran up to 161 for March and down to 155 for May, while the latest, for July, just issued, is 160. Thus prices average higher, but they do not average much higher.

Then the question comes whether individual lines have shown much swing. If the assumption frequently made is correct that the deflation of 1921 was substantially complete and that we shall be better off by holding things as they were then left, comparison with average prices in 1922 is much to the point. The following table shows for the individual groups the relation which prices in July (last month) bore, first to the 1913 prices and next to the 1922 prices:

#### July Commodity Prices

	Relative to—	
	1913	1922
Farm products .....	162	121
Foods .....	157	114
Clothes and clothing .....	189	104
Fuel and lighting .....	172	79
Metals and metal products .....	126	104
Building materials .....	170	101
Chemicals and drugs .....	133	107
Housefurnishing goods .....	169	96
Miscellaneous .....	143	123
All commodities .....	160	107

This does not show much tendency to inflation up to the present time. Fuel and lighting have come down from 1922, which was the coal strike year. Miscellaneous commodities have gone up sharply, but that cannot do much harm. Farm products have gone up, but everybody seemed to want them to do so.

### Variations in Mill Outputs

**W**HAT is the steel industry's real capacity to produce ingots is the question raised by Chairman Topping of the Republic Iron & Steel Co. in a letter to THE IRON AGE printed in the issue of Aug. 6, page 347. Editorial comment on the general subject was made last week. The declared ingot capacity for Dec. 31, 1924, given in the last American Iron and Steel Institute report, is 58,438,420 tons. This is the sum of the capacity statements furnished the institute by the individual producers. The estimate of real or practical capacity adopted by THE IRON AGE early in 1924,

and since used extensively for computing percentages of mill operations, was 54,000,000 tons.

Raising this question brings up the point that the manager of a works does not himself know just what his plant will do. It has been a very common experience for a mill to show a certain performance, when well filled with orders, and break that record the next time opportunity was afforded, although no substantial change had been made in the equipment meanwhile.

It is unfortunate, in this connection, that there is such a dearth of records for public use showing what given plants do from time to time. There is one exception to this general statement, however, and it thereby becomes of particular interest. We refer to the independent sheet industry, which has made public figures showing the performance of 33 numbered and not otherwise identified sheet producers in the first three months of this year. This showing is worthy of study both from its uniqueness and from its illustrating very forcibly how the output of a mill may vary from an assumed rating.

A sheet plant has a "mechanical operation" and an actual production. The mechanical operation is stated in percentages of a full operation, which would be 16 turns each week for each mill in the plant during the period. A rating is used, for sheet mills 7.65 net tons per turn and for jobbing mills 22.635 net tons per turn. Then the actual tonnage produced is computed against the rating. These figures having been made public, we have divided, for each of the 33 producers, the mechanical operation into the production, the result showing the percentage by which each producer exceeded or fell short of producing a tonnage equal to the standard rating. The excesses and shortages are shown below:

*Production Above and Below Rating, Per Cent, for 33 Sheet Producers*

+36.0	.....	+5.8
+32.8	.....	+5.7
+32.1	.....	+4.1
+30.7	.....	+3.6
+28.0	.....	+1.9
+27.5	.....	+0.9
+25.9	.....	-0.8
+25.3	.....	-2.6
+20.8	.....	-4.3
+20.0	.....	-4.8
+19.7	.....	-4.8
+19.4	.....	-7.6
+13.1	.....	-8.6
+11.6	.....	-10.5
+10.3	.....	-20.3
+10.0	.....	-22.5
+ 8.1	.....	+9.6*

\*Average of the 33 individual producers.

When four producers out of 33 run more than 30 per cent above a standard rating and three run more than 10 per cent below that standard rating, in a period of three months, it is obvious that the circumstances varied widely. There were differences in equipment, in the skill or assiduity of the workmen and in the character of the orders worked.

The excess in the average of the whole group of 33 producers, about 10 per cent, suggests that performance has improved since the standard was selected. Individual cases of this sort have been numerous in the whole history of the steel industry, as to ingot production.

## Building Homes for Employees

SINCE the disappearance of housing shortage in most of the cities and larger towns of the United States, a check has been put on the enterprise of industrial companies in building houses for rental and sale to their employees. In recent years, in not a few instances, groups of houses have been financed and erected, within easy distance of the plant, where otherwise workers would be hard put to it to find dwelling places for their families, and particularly for rental at a price within their means.

In most of the large manufacturing communities landlords of tenement property, as is well known, boosted rentals without mercy, taking full advantage of the operation of the law of supply and demand. For this reason alone, in some extreme cases, manufacturers attacked the situation by creating an adequate supply of tenements at reasonable rentals. But the chief reason for these building programs in most cases was that in busy times it was impossible for the increasing working forces to find enough tenements at any price, without locating at a distance requiring tedious travel morning and night. Under such conditions it was not easy to maintain a working force without abnormally large turnover.

On paper it seemed possible to the planners of these colonies to build houses at a cost so that they could be rented to employees at a reasonable figure, or sold to them at cost plus interest on an easy payment plan. But in practice—at any rate in some cases—such was not the experience. Instead of getting invested money back, there has been in many cases a direct loss. Yet those who were responsible for the colonies, thinking in terms of dollars and cents, feel no regrets, and probably they have no reason for regrets. No doubt exists that indirect earnings and savings from these expenditures were considerable.

Among those workers who contracted to buy company houses, labor turnover naturally was very low and this was the more important because, generally speaking, the better class of labor, the most highly valued skilled workmen, were those who took advantage of the opportunity. Others, as tenants comfortably situated at a time when most families of their class were struggling with landlords, or living far away from the plant, were also loath to make a change in employment which would have meant moving their families. When business let down and employment became less steady and less remunerative, the advantage to the owners lessened, naturally. Yet the influence of the housing project remains, to become greater when business again approaches a high peak.

Such is the deduction of officers of a company which went through the experience on a large scale, establishing a numerous colony of cottages. They admit that they lost money, considering their effort strictly as a real estate investment. But they were face to face with the problem of finding homes for their abnormally large force of men. The housing situation in their city, a moderately large one, was acute. Of the several scores of houses they built, some were sold and others were rented to the men.

Problems arose out of the hard times. Being a landlord is not always an enviable role for a manufacturer. On the whole the company regards with satisfaction what it did. But probably its officers would not advise a similar project, except to meet a critical situation which would arise in a large community only in a period such as that of the war. It is a different matter with a rapidly expanding industry located in a small town. Provision must be made for the help which must be drafted from other places. Local capital is not sufficient to meet the emergency, unless the company joins in. But in the larger places real estate investors may be depended upon to keep abreast of the demand for home property. Ordinarily the market is controlled by the renters and not by the landlords.

### CORRESPONDENCE

#### Status of the Campaign Against Industrial Fatigue

*To the Editor:*—I have read with much interest your editorial of July 9 on "Getting Rid of Industrial Fatigue," and wish I might agree with your optimistic attitude. If "the bulk of the work of eliminating industrial fatigue" had been accomplished, fatigue elimination would be much more fashionable than it now is.

It is true industry is much more concerned with the problems of fatigue than it was 10 years ago. It is true that there are more rest apparatus, chairs and other fatigue eliminating devices, both in plants and in offices, than there were even a year ago; but these are looked upon more or less as an experiment by the management, and more or less as a challenge by the workers. In many places no one has taken the trouble to explain the reason for the fatigue-eliminating work, and there is little attempt made to enforce the use of the equipment or even to explain its advantages. In other places there are not enough chairs or couches to be used by every one during rest periods, with the result that many who need them most have no opportunity to use them, and some of the older ones are apt to feel that they class themselves with the superannuated if they are found sitting or lying down.

Until fatigue is thought worthy of laboratory research, and fatigue elimination is carefully taught in every industry in the country, along with the motion study that simplifies the work and the standardization that maintains it, we should not flatter ourselves that we can afford for a moment to rest on our laurels.

LILLIAN M. GILBRETH.

Montclair, N. J., Aug. 13.

#### American Electrochemists to Discuss Electric Ferroalloys

Besides a symposium on "The Relation of Electrochemistry to the Fertilizer Industry," there will be a round table discussion on "Electric Ferroalloys" at the annual autumn meeting of the American Electrochemical Society to be held at the Signal Mountain Hotel near Chattanooga, Tenn., Sept. 24 to 26. The ferroalloy meeting is under the direction of Robert Turnbull. On Saturday, Sept. 26, members and guests will spend the whole day in inspecting the Wilson Dam at Muscle Shoals.

The spring meeting of the society will be held in Chicago late in April, 1926.

#### JAMESTOWN RATE CHANGE

##### Examiner Holds Pittsburgh Rates Unfair and Recommends Reduction and Reparation

WASHINGTON, Aug. 18.—Application of a scale of commodity rates on iron and steel products throughout official classification territory is suggested in a report proposed by Examiner C. I. Kephart of the Interstate Commerce Commission. His proposal was made in passing upon a complaint of the Chamber of Commerce of Jamestown, N. Y., in which the examiner sustained the charges that the rates on iron and steel articles in carloads from the Pittsburgh district to Jamestown and Falconer, N. Y., are unreasonable and unduly prejudicial. In suggesting that the commodity rates be established on iron and steel in official classification territory and in the Jamestown case, the examiner used as his precedent the recent decision in the Jones & Laughlin case in which the commission prescribed a scale of commodity rates, which apply to iron and steel traffic from the Pittsburgh district to St. Louis.

The rate-making routes in the Jamestown Chamber of Commerce case, it is stated, are the Pittsburgh & Lake Erie to New Castle, Pa., and Erie thence to destination, 179 miles, or the Pennsylvania to Transfer, Pa., thence to Erie, 180 miles. The rate for these distances under the Jones & Laughlin scale, the examiner says, is 19c. per 100-lb. and for the 3.6 miles greater distance to Falconer it is 19.5c. The present fifth class rate from the Pittsburgh district to Jamestown is 26.5c., an increase of 128.5 per cent over the commodity rate of 11.6c. in effect prior to Dec. 26, 1917.

It is stated that manufacturers competing with those in Jamestown enjoy rates lower than the fifth-class basis, an example being the rate of 15.5c. or 67.3 per cent of the class rate, from Pittsburgh to Corry, Pa., an intermediate point, 27 miles southwest of Jamestown. The reason for this, it is explained, is that within a definite area surrounding Pittsburgh and Youngstown and Cleveland, Ohio, iron and steel articles take less than the class rates, while points outside of that area in most instances take the full class rates. Corry is just within the area. This area is in the so-called short-haul districts, where commodity rates apply. In certain portions of trunk-line territory commodity rates that range from 61.4 per cent to 78.9 per cent of the class rates, averaging about 75 per cent, are in effect from a number of steel producing points.

In addition to suggesting the Jones & Laughlin scale of commodity rates for official classification territory, the examiners recommend reparation for a number of Jamestown consignees.

#### Commercial Steel Castings

WASHINGTON, Aug. 18.—Bookings of steel castings in July totaled 54,474 tons, or 54.2 per cent of shop capacity, according to reports made to the Bureau of the Census by principal manufacturers representing more than two-thirds of the commercial capacity of the country. The July figures show a recovery in business over June, bookings for the latter month having amounted to 48,413 tons, or 48.2 per cent of capacity. Of the July bookings, 19,953 tons were for railroad specialties, representing 46.4 per cent of the capacity in this line, while bookings for miscellaneous purposes amounted to 34,521 tons, or 60 per cent of capacity for these lines.

Bookings of 68 identical companies during the first seven months of 1925 amounted to 415,479 tons, as against 436,887 tons during the corresponding period of the previous year. During the first seven months of 1924 bookings of castings for railroads amounted to 218,453 tons, as against 164,498 tons during the corresponding period of 1925. These 68 concerns had a monthly capacity of 100,400 tons in 1924 and 1925, of which 43,000 tons is usually devoted to railroad specialties and 57,400 tons to miscellaneous castings.

## EXPORT TRADE QUIET

**Japan Buys Seamless Pipe in France—Inquiry for Heavy Rails—Bascule Bridges for Welland Canal**

NEW YORK, Aug. 18.—Few new inquiries have appeared recently from the Far East, but there is a fair volume of small lots in the market, particularly from China. The market on wire shorts continues unchanged at \$45 to \$46 per ton, c.i.f. Chinese port, although an exporter to China has, in the past fortnight, been offering slightly higher than this to American mills. In Japan, the Nippon Oil Co., has purchased 143,300 meters of oil well casing, a French producer of Mannesmann pipe being reported as the seller. Among current inquiries from Japan is a request for prices on 13 miles of 75-lb. rails for the Kei-Han Electric Railway Co. Bids have been opened by the Imperial Government Railways on 41,000 tie plates.

A decrease in imports into Japan of nearly all leading commodities was notable in July, particularly in iron, steel and machinery, according to a cablegram to the Department of Commerce. Importation of machinery totaling 5,900,000 yen represents the smallest monthly valuation since September, 1923, while iron and steel imports in July, valued at 4,500,000 yen, were the smallest in four years. The excess of exports over imports in July in Japan was nearly 42,000,000 yen.

The Department of Railways and Canals, Canada, has extended the opening date for bids on four bascule bridges for the Welland Ship Canal, to Aug. 31. Specifications are available to American companies through the United States Department of Commerce.

## Easier Pig Iron Prices at Youngstown

YOUNGSTOWN, Aug. 18.—Pig iron prices appear to be somewhat weaker in this district, while steel scrap is firming. Sales of No. 2 foundry have been closed at \$18.25, Valley furnace, or 25c. per ton under the market, while No. 2X foundry has sold at \$18.50, or 50c. per ton below nominal quotations. One recent sale of No. 2X figured back to a price of \$18.37, the seller absorbing part of the freight in order to compete in a more advantageous way with a producer in another district figuring on the same tonnage.

The only other price change of consequence in this district relates to galvanized sheets, which are held nominally at 4.25c. to 4.30c. per lb., comparing with a recent price of 4.20c. However, the mills booked considerable business at the old figure prior to the advance which will therefore not actually become effective until these orders are worked off.

## Milling Cutters Simplified

The United States Department of Commerce has issued simplified practice recommendation No. 36, covering milling cutters. The standards have been agreed to by manufacturers, distributors and users. There has been a reduction from a total of 944 items to 570.

In commenting on the results in the milling cutter industry the Department of Commerce makes this statement:

"This recommendation deals with the first machinery project to pass through the regular procedure of the division of simplified practice. It is hoped that engineers, purchasing agents, works superintendents, standardization bodies and all others who are in any way concerned with milling cutters will derive such tangible benefits from this simplification of the list of sizes that it will become desirable to similarly treat other machines, machine tools and their appurtenances. Such practice should decrease stocks, production costs, selling expenses, misunderstandings, and all cost to the users."

The Walworth Mfg. Co., Boston, according to President Howard Coonley, is negotiating for the purchase of the Kelly & Jones Co., Greensburg, Pa., maker of pipe fittings and valves.

## SHAPE IMPORTS LARGE

**Structural Steel from European Mills in First Half of 1925**

Reference was made in a recent issue of THE IRON AGE to the striking increase in imports of structural shapes to the United States in the first half of this year. The following table has been prepared from the statistics of the Department of Commerce, showing the countries from which these shipments were made, also the ports of entry in the United States. The figures showing European countries from which the steel came give the impression that Belgian steel works contributed the greater part of these importations. That is due to the fact that most of the steel was shipped from Antwerp, though it may have been rolled in the mills of other countries than Belgium. It will be noticed that the Gulf and Pacific Coast receipts of structural steel were on a considerable scale in the first half of the year:

*Imports of Structural Shapes by Countries of Origin and Ports of Entry, January-June, 1925—Gross Tons*

	Jan-	Feb-	March	April	May	June	Total	Six
							Months	Months
Belgium . . .	3,727	3,499	6,105	7,281	6,474	10,498	37,584	
France . . .	239	242	567	336	501	336	2,221	
Germany . . .	225	60	165	92	246	327	1,115	
United Kingdom . . .	78	81	109	506	79	164	1,017	
Other Countries . . .	47	127	58	98	82	25	437	
Total . . .	4,316	4,009	7,004	8,313	7,382	11,350	42,374	
Ports of Entry	Jan-	Feb-	March	April	May	June	Total	Six
Galveston . . .	2,092	1,200	279	1,402	1,559	2,642	9,174	
New York . . .	513	980	764	1,491	2,014	2,383	8,145	
Philadelphia . . .	162	86	2,333	1,296	1,063	2,784	7,724	
San Francisco . . .	242	803	924	2,103	1,114	1,247	6,433	
Maryland . . .	186	6	2,186	443	452	567	3,840	
Los Angeles . . .	513	478	132	456	37	296	1,912	
Other ports . . .	608	456	386	1,122	1,143	1,431	5,146	
Total . . .	4,316	4,009	7,004	8,313	7,382	11,350	42,374	

The foreign invoice values of the structural steel imports show considerable variation. Dividing the total number of pounds into the total value for January gives 1.91c. For May the quotient is 1.56c., which was also the average for March. Too much dependence cannot be put on the figures thus obtained, however, since they do not include freight, insurance and other charges, and of course the duty must be added to arrive at the market price at American port.

## Hungarian State Iron Works Converted to a Commercial Enterprise

The Hungarian State iron works are to be converted into a commercial enterprise, in accordance with a recent decree, says Assistant Trade Commissioner Elwood A. Welden, Vienna, in a report to the Department of Commerce. Formerly these iron works consisted of three separate concerns, but will now be united under the name of Royal Hungarian State Iron, Steel and Machine Works. The concern, which must carry on its work in the same manner as a private corporation, will be considered as an independent legal entity with its main seat at Budapest, and the State will be the exclusive owner.

## Coke Production in July

WASHINGTON, Aug. 18.—Reflecting an increase of 0.4 per cent, or 13,000 net tons, production of by-product coke in July totaled 3,168,000 tons as against 3,155,000 tons in June, according to the Geological Survey. The output per day, however, decreased 3056 tons or 2.4 per cent, due to the fact that July in the by-product coke industry is regarded as a 31-working day month. The plants were operated at about 78 per cent of capacity. Beehive coke output continued to decline during July, the total reported being 532,000 net tons, a decrease of 64,000 tons, or 10.7 per cent, compared with June. Production of bituminous coal during the first week in August, 9,957,000 net tons, was the highest since Feb. 7.

## FABRICATORS ORGANIZE

### Companies in New York Form Board of Trade —Several Objectives

With the purpose in view of improving the standard of service in the structural steel business, the Structural Steel Board of Trade has been formed by fabricators in the New York district. The headquarters of the association are at 100 East Forty-fifth Street and the details of its organization are in charge of Charles L. Eiditz, chairman, who is also chairman of the Electrical Board of Trade. The new organization, which will have nothing to do with prices, will endeavor to develop a high standard of service to the consuming public. Statistics will be gathered on the volume of business pending and tonnage awarded and records will be maintained of such business for the convenience of members. When requested the association expects to act as arbitrator in disputes between fabricators and their clients, performing a service similar to that of the Electrical Board of Trade. A credit de-

partment will probably be built up for the benefit of the members and such service will be extended to others, not members of the board.

According to Mr. Eiditz, the board expects to work for the elimination of certain practices that are unprofitable to both buyer and seller. Discontinuance of quoting on contracts on a tonnage basis, before the plans are available will be urged, on the ground that a fairer method is a price submitted for the particular contract, based on the actual work as shown by the plans.

Officers of the Structural Steel Board of Trade are: W. A. Garrigues, Levering & Garrigues Co., president; R. C. Post, Post & McCord, Inc., vice-president; J. Loewenstein, Taylor Fichter Steel Construction Co., treasurer; J. L. Hay, Hay Foundry & Iron Works, chairman of the finance committee. The board of directors includes: A. M. Conneen, Jr., Hedden Iron Construction Co.; R. W. Knight, McClintic-Marshall Co.; L. D. Rights, Shoemaker Bridge Co.; R. T. Brooks, George A. Just Co., and Charles L. Eiditz, who is active chairman of the Structural Steel Board of Trade. All officers of the organization are also directors.

## REVISED STEEL RATES

### Southwestern Freight Structure Amended— More Reductions Than Advances

**WASHINGTON**, Aug. 17.—In a decision announced on Saturday of last week the Interstate Commerce Commission found justified proposed rates on wire fencing, wire, nails, staples, etc., in the Southwest. The decision, affecting a number of other products, was handed down in connection with the case relating to commodity rates in Southwestern territory. It concerns schedules by which the railroads propose to establish commodity rates in compliance with the commission's order in the so-called Memphis-Southwestern investigation.

Generally speaking, the proposed rates are for application between points in Arkansas, Louisiana west of the Mississippi River, southern Missouri, and a few points in southeastern Kansas, eastern Oklahoma and eastern Texas. They also are to be applied between such points, on the one hand, and defined territories in central, western trunk-line, and southern territories and related points, on the other.

#### Reductions Exceed Increases

Most of the iron and steel articles on which the proposed rates were found justified now are rated fifth-class in the Western classification, minima 30,000 and 36,000 lb. These products generally move on commodity rates in the Southwest. The proposed scale for single-line hauls is about 26 per cent of the first-class scale prescribed in the Class Rate Investigation case. The proposed joint-line scale is from 2c. to 1c. higher than the proposed single-line scale for distances to and including 500 miles; beyond 500 miles the proposed single-line and joint-line scales are the same. The carriers are required to amend the joint-line scale so as to make the differential over the single-line scale 1c. instead of 0.5c., for distances of 381 to 400 miles.

The proposed rates effect both increases and reductions. Considered as a whole, the proposed reductions are more numerous than the increases. To 43 typical destinations 318 reductions and 175 increases are proposed. Some of the changes are as follows: From St. Louis, 44 reductions and 26 increases; from Kansas City, 26 reductions and 43 increases; and from Memphis, 45 reductions and 28 increases.

### British Empire Corporation to Increase Operations

According to a statement issued by the British Empire Steel Corporation, a substantial increase in the operations of the Sydney, N. S., steel works will take place within the next two weeks, with consequent in-

creased employment. The blooming mill and billet mill will start up Aug. 24. No. 1 blast furnace will blow in to produce foundry pig iron, and probably will continue in blast throughout the remainder of the year. The blooming and billet mills will turn cold steel into shape to supply the barbed wire and nail mills, which are experiencing a good demand. The market for barbed wire has been stimulated by the good Western crop, the farmers evidently using some of their gains to fence their properties. The blooming and billet mills will have enough work to keep them going for about 30 days, after which their operations will depend upon the market demand for steel. The expansion will mean employing 200 to 300 additional men.

### Independent Sheet Mills Accumulated Business in July

July proved to be a somewhat quieter month with independent sheet manufacturers than the month before, but it made a decidedly favorable showing as compared with July last year, according to the monthly report of the National Association of Sheet and Tin Plate Manufacturers, released this week. Sales of the companies reporting, and they represented more than 75 per cent of the country's capacity, were almost 36,000 tons smaller than those reported for June, but they exceeded those for July of last year by almost 117,000 tons. Production and shipments also declined last month as compared with June, but a good deal of capacity was idle during the week following the Fourth of July and some mills were down as much as two weeks. Unfilled orders as of July 31 were more than 35,000 tons greater than one month before and were considerably more than double those on the same date last year. The report makes the following comparison, with tonnage figures in net tons:

	1925	1924	
	July	June	May
			July
No. of mills.....	699	699	699
Capacity per month...	433,600	421,600	397,100
Per cent reporting...	75.3	75.7	75.4
Sales.....	252,871	286,543	186,538
Production.....	246,404	266,290	260,470
Shipments.....	223,454	231,066	232,372
Unfilled orders.....	475,950	440,687	399,330
Unshipped stocks.....	88,859	80,938	81,462
Unsold stocks.....	42,081	51,614	52,051
Percentages of Capacity			
Sales.....	80.1	92.8	62.3
Production.....	75.5	83.4	87.0
Shipments.....	70.8	74.9	77.6
Unfilled orders.....	150.8	142.8	133.4
Unshipped stocks.....	27.2	25.3	27.2
Unsold stocks.....	12.9	16.2	17.4

The iron and steel mill of the Consolidated Steel & Iron Co., Terre Haute, Ind., has been sold for taxes to Charles L. Runyan. Mr. Runyan made the purchase for \$8,756.98 and will hold it for two years, during which time the former owners may redeem it.

# Development Slow in Europe

Prices Sagging in Many Markets—Stiffer in  
British Tin Plate—French Financial  
Situation Better

(By Cablegram)

LONDON, ENGLAND, Aug. 17.

CLEVELAND pig iron has eased further. Business is very quiet, owing to holidays this week on the North-east Coast. Hematite is more active on the report that further restriction of output is likely.

Foreign ore is stagnant. Best Bilbao Rubio is quoted at 20s. 6d. (\$4.98) c.i.f. Tees, but there are no buyers at this figure.

Scotch plants now have resumed operations after a longer than normal annual stoppage of business. Finished iron and steel generally are quiet. There is considerable Continental competition but the undertone is easy. Discussions are proceeding between employers and workmen in the shipbuilding industry, to find a remedy for the chronic depression still prevailing. A large bridge works has been sold, for dismantling purposes.

Pig iron exports in July were 33,476 gross tons, of which 7050 tons went to the United States. Total exports of iron and steel amounted to 306,605 tons.

## Sheets and Tin Plate

Tin plate is more active on initiation of the negotiations for revival of the tin plate stabilization scheme. Export markets are taking more interest and the works no longer are disposed to accept the cheapest recent prices.

Galvanized sheets are firm, on continued Indian buying.

Black sheets are quieter, after the previous spell of buying, but makers are comfortably booked and prices are steady.

## On the Continent of Europe

Continental steel markets are quiet, but wire rods are firm, owing to the attitude of controlling syndicates.

French railroads propose placing orders with domestic works for material to the amount of 260,000,000 fr. (\$12,000,000), for delivery up to the end of next year, if traffic revives.

The strike is still in progress in Belgian plants.

Threatened strike at Saar steel works was averted. In Polish Silesia 9000 workers are striking against the provisional continuance of the 10-hr. day.

Bismarck Hütte, Königshütte, Falvahütte and Baildonhütte are idle. [Current authorities do not list these works. They probably are small.]

## British Strike Settlement May Provide Cheaper Coal

LONDON, ENGLAND, Aug. 6.—The chief feature of interest in the iron and steel trades during the past two weeks has been the decision of the Government to subsidize the coal industry, and thereby the threatened coal strike has been avoided. What effect it will have upon the iron and steel trade remains to be seen, but if cheaper coal is to be the outcome, the costs of producing iron and steel should be reduced. Nevertheless the industry itself is in a parlous condition, and one continuously hears of works running part time or closing down entirely, on account of the loss involved in running them.

Iron and steel today, though unable to compete with the product of the Continental mills, is only about 25 to 30 per cent above the pre-war selling price, whereas the index figure of the cost of living in this country is more than double that figure. Thus it is difficult to see how iron and steel manufacturers can reduce their prices substantially further. In the meantime business has been in a state of suspense, both owing to the fears of a coal stoppage and to the holiday periods, both in this country and in Scotland, and it will be fully another week before normal conditions will prevail.

There is practically no demand to speak of, save

British and Continental European prices per gross ton, except where otherwise stated, f.o.b. makers' works, with American equivalent figured at \$4.86 per £, as follows:

Durham coke, del'd...	£1 0s.	\$4.86
Bilbao Rubio ore...	1 0 <sup>1</sup> / <sub>2</sub>	4.98
Cleveland No. 1 fdy..	3 14	17.98
Cleveland No. 3 fdy..	3 10	17.01
Cleveland No. 4 fdy..	3 9 <sup>1</sup> / <sub>2</sub>	16.89
Cleveland No. 4 forge	3 9	16.77
Cleveland basic.....	3 11 <sup>1</sup> / <sub>2</sub>	17.37
East Coast mixed...	3 15 <sup>1</sup> / <sub>2</sub>	18.34
East Coast hematite..	4 19	24.06
Ferromanganese .....	15 10	75.33
*Ferromanganese ....	15 5	74.11
Rails, 60 lb. up...	8 5 to 9 0s.	40.09 to \$43.74
Billets .....	6 10 to 7 5	31.59 to 35.23
Sheet and tin plate bars, Welsh .....	6 10 to 6 15	31.59 to 32.80
Tin plates, base box..	0 19 <sup>1</sup> / <sub>2</sub> s to 0 19 <sup>1</sup> / <sub>4</sub>	4.65 to 4.68 C. per Lb.
Ship plates .....	8 0 to 8 10	1.73 to 1.84
Boiler plates .....	11 10 to 12 0	2.49 to 2.60
Tees .....	8 2 <sup>1</sup> / <sub>2</sub> to 8 12 <sup>1</sup> / <sub>2</sub>	1.76 to 1.87
Channels .....	7 7 <sup>1</sup> / <sub>2</sub> to 7 17 <sup>1</sup> / <sub>2</sub>	1.60 to 1.71
Beams .....	7 2 <sup>1</sup> / <sub>2</sub> to 7 12 <sup>1</sup> / <sub>2</sub>	1.54 to 1.65
Round bars, 3 <sup>1</sup> / <sub>2</sub> to 3 in.	8 12 <sup>1</sup> / <sub>2</sub> to 9 2 <sup>1</sup> / <sub>2</sub>	1.87 to 1.98
Galv. sheets, 24 gage.	16 2 <sup>1</sup> / <sub>2</sub> to 16 5	3.49 to 3.52
Black sheets, 24 gage.	11 10 to 11 15	2.49 to 2.55
Black sheets, Japanese specifications .....	15 5	3.30
Steel hoops .....	10 15 and 12 16*	2.33 and 2.71*
Cold rolled steel strip, 20 gage .....	18 0	3.90

\*Export price.

+Ex-ship, Tees, nominal.

## Continental Prices, All F.O.B. Channel Ports

Foundry pig iron: (a)		
Belgium .....	£3 1s. to £3 2s.	\$14.82 to \$15.06
France .....	3 1 to 3 2	14.82 to 15.06
Luxemburg .....	3 1 to 3 2	14.82 to 15.06
Basic pig iron: (a)		
Belgium .....	3 0 to 3 1	14.58 to 14.82
France .....	3 0 to 3 1	14.58 to 14.82
Luxemburg .....	3 0 to 3 1	14.58 to 14.82
Billets:		
Belgium .....	4 14	22.84
France .....	4 14	22.84
Merchant bars:		C. per Lb.
Belgium .....	5 8	1.17
Luxemburg .....	5 8	1.17
France .....	5 8	1.17
Joists (beams):		
Belgium .....	5 4	1.13
Luxemburg .....	5 4	1.13
France .....	5 4	1.13
Angles:		
Belgium .....	5 18 <sup>1</sup> / <sub>2</sub> to 6 0	1.28 to 1.30
1/8-in. plates:		
Belgium .....	6 6 to 6 7 <sup>1</sup> / <sub>2</sub>	1.36 to 1.38
Germany .....	6 6 to 6 7 <sup>1</sup> / <sub>2</sub>	1.36 to 1.38
1/4-in. ship plates:		
Luxemburg .....	6 9	1.40
Belgium .....	6 9	1.40

(a) Nominal.

in special cases, such as galvanized and black sheets, both of which branches have been moderately active, the former in India specifications, and the latter in thin sizes for Japan. Engineering and structural departments are moderately busy on domestic trade orders, but the volume of orders coming in from overseas, especially for heavy-gage material, is exceedingly disappointing. Considerable interest has been aroused at the revival of sales of hematite and special foundry iron to America, and hopes are entertained of some substantial demand developing.

Quarterly returns of the shipping laid up idle at the principal ports of the United Kingdom on July 1 last, now issued by the Chamber of Shipping, show, as compared with the figures for April last, an increase of 384,117 tons net, or of 97.7 per cent. The present figures show an increase over those of a year ago of 307,106 tons net, or 65.3 per cent. The amount of tonnage laid up idle on July 1 is, in fact, the largest since October, 1922.

## IMPROVED FINANCES HELP

### French Market Still Troubled by German "Dumping"

PARIS, FRANCE, Aug. 7.—The financial position of the country is on the mend; industry and commerce have their eyes fixed on the reimbursements of advances being paid back to the Banque de France, on the rise of the Government stocks, on the underwriting of the 4 per cent loan, with the idea of finding there some sign wherewith to gage what the market will be like at the end of the holidays.

News from foreign parts is not good and, setting Great Britain aside, we can but see that the strike of iron and steel workers in Belgium continues, that German industry is passing through a crisis, the worst since the Armistice and of financial origin, that the United States has a diminished export trade. And with regard to ourselves, in spite of the stability of exchange, we must note the steady rise of living costs, which will certainly force industry into conceding increased wages, which, in turn, will surely bring on a new rise in the cost of living.

### Producers' Ententes

The great event of last week was the decision taken by steel producers to protract provisionally for two months, i.e., until Oct. 1, the ententes on prices. We foreshadowed this, and now it is official. The desire for ententes is such that, in spite of difficulties yet to be smoothed out, a hope is entertained that an agreement will be reached before the end of the period—an agreement which, for a number of articles, may take the form of a sales comptoir (rails and beams, probably) and for others an entente on the basis of allotment of the needs of inland consumption, in ratio of works output capacity.

**Coke.**—During July the ORCA received from the Ruhr 232,926 tons of coke, i.e., a daily average of 7550 tons. For the first three days of August arrivals amounted to 19,421 tons.

**Pig Iron.**—Pig iron production for June was much the same as for several months, save, however, as regards foundry iron, which is slightly on the decrease. Basis price for foundry iron No. 3 PL is maintained at 345 fr. (\$16.39 per gross ton) for August, so that orders, which have been pretty satisfactory during July, will no doubt keep the pace during August.

Export prices have hardened a little at 330 fr. Belgian (\$15.10). In face of the decrease of British and German pig iron, it would need but that the franc should rise by a few points that these products should, once more, appear on our market.

Hematite prices are slightly firmer, but vary greatly from one region to the other; thus in the Center one can deal at 410 to 415 fr. per ton at works (\$19.50 to \$19.75); in the Southeast, at 425 to 430 fr. (\$20.20 to \$20.45), and finally in the East at 445 fr. (\$21.15).

A Southern producer quotes for the East and Center regions at 440 fr. (\$20.90) delivered.

**Ferroalloys.**—Prices are very firm and on the rise for certain species. Manganese ore has risen substantially with the rise of sterling, spiegel, variety 10 to 12 per cent Mn, is quoted at 540 to 550 fr. (\$25.67 to \$26.15), and 18 to 20 per cent Mn is quoted at 675 to 685 fr. (\$32.10 to \$32.55) per ton delivered. Ferromanganese, 76 to 80 per cent Mn, is quoted at 1700 to 1725 fr. (\$80.80 to \$82) per ton delivered; however, it is said that one producer of the North accepts 1630 fr. (\$77.50) per ton at works.

The Comptoir Electro-Métallurgique has increased by 100 fr. per ton 90 per cent ferrosilicon, that is quoted now at 2800 fr. (\$133.10), and by 30 fr. per ton silico-manganese (20 to 25 per cent Si and 50 to 55 per cent Mn) at 1750 fr. (\$83.20).

**Rolled and Semi-Finished Products.**—Inland orders are somewhat better; delivery is one month for beams and for concrete bars; two months for merchant steels. For export, by reason of the Belgian strike, important orders have been secured by our works, which show some anxiety at the reappearance of German works on the market where the latter quote prices indicating a dumping tendency. They may be moved thereto by need for money, but the result is extremely disagreeable to us. Sheet transactions are always dull, save in a measure for light descriptions, the basis price of which varies between 1050 and 1080 fr. (2.23c. and 2.29c. per lb.) delivered.

Prices authorized by the O. S. P. M. for rails are as follows: Vignole rails of more than 30 kg., 530 fr. (\$25.20) and per order of less than 500 tons; rails of less than 20 to 30 kg. carry an increased rate of 5 fr. (24c.) per ton. Broca rails, 630 fr. (\$29.95) per ton for orders under 200 tons.

The last export quotations brought to our knowledge are the following: Basic blooms, £4 10s. (\$21.87); billets, £4 12s. (\$22.35); largets, £4 15s. (\$23.08); beams, £5 3s. 6d. to £5 4s. (1.12c. to 1.13c. per lb.); bars, £5 7s. 6d. (1.17c.), and heavy sheets, £6 7s. 6d. (1.39c.), all f.o.b. Antwerp.

**Foundry Iron.**—No change is to be noted with regard to foundry iron; many shops have reduced production. Foundries which work on their collection, and more particularly those who furnish heating apparatus, are better situated. Producers for cast iron pipes are also well supplied with work.

## FRENCH FOREIGN TRADE

### Imports and Exports of France in First Half

PARIS, FRANCE, Aug. 7.—Following are figures representing, in the aggregate, French metallurgical imports and exports for the first half of 1925, compared with the first half of 1924.

**Pig Iron.**—Imports: during 1925, 16,502 metric tons, as against 24,239 tons in 1924. Exports: 331,760 tons in 1925, as against 391,939 tons in 1924.

**Ferroalloys.**—Imports: 12,264 tons in 1925, as against 4949 tons in 1924. Exports: 2107 tons in 1925, as against 10,556 tons in 1924.

**Steel and Iron.**—Imports: in 1925, 73,726 tons, as against 351,078 tons in 1924. Exports: 1,544,204 tons, as against 1,280,661 tons in 1924.

We supplied the United States, during June, with 102 tons raw pig iron, and 1953 tons during the first six months of 1925; 213 tons of iron and steel blooms, billets and bars, during June, and 1920 tons during the first half year; 497 tons of rails in June and 3829 tons during the first six months; 2140 tons castings in June and 7438 tons during the first half year.

On the other hand we received from the United States 697 tons of uncut sheets during the first six months of 1925.

## FRENCH IRON AND STEEL

### Output for June and First Six Months of 1925 Show Increase

PARIS, FRANCE, Aug. 7.—The French pig iron output in June totaled 703,439 metric tons, a daily average 23,430 tons, as compared with 706,264 tons in May, a daily average of 22,800 tons. It included 34,607 tons of forge iron, 133,063 tons of foundry iron, 4294 tons of Bessemer iron, 510,994 tons of basic iron and 20,381 tons of special irons. There were 141 furnaces in blast on July 1, the same number as on June 1.

Steel output in June amounted to 599,857 tons (daily average 20,000 tons), compared with 596,309 tons in May (daily average 19,200 tons), of which 588,630

tons was ingots and 11,227 tons castings. As regards processes of production, 6038 tons was acid Bessemer, 426,130 tons basic Bessemer, 161,018 tons open-hearth steel, 956 tons of crucible steel and 5715 tons was made in electric furnaces.

French pig iron output for the first six months of 1925 totaled 4,090,990 metric tons, and included 201,498 tons of forge iron, 801,397 tons of foundry iron, 24,812 tons of Bessemer, 2,960,385 tons of basic iron and 102,898 tons of special irons.

The steel output for the first six months of 1925 amounted to 3,567,367 metric tons, of which 3,487,200 tons was ingots and 80,167 tons castings. As regards processes of production, 43,492 tons was acid Bessemer, 2,453,253 basic Bessemer, 1,028,884 tons open-hearth steel, 5867 tons crucible steel and 35,871 tons was made in electric furnaces.

## LABOR SUPPLY GOOD

### Steel Works Have Adequate Common Labor and May Select

WASHINGTON, Aug. 17.—The iron and steel and related industries not being operated at capacity are finding no difficulty in getting laborers. On the contrary, according to reports coming here, they find it possible to be unusually selective in choosing labor and in weeding out the inefficient and keeping the efficient workers. The readjustment which this may bring about in the class of employment in these lines is being watched with great interest.

Among other things, much attention is being paid to the possible effect this realinement may have on two classes of labor in these industries that are relatively new, especially in the North. These are the Mexican and Negro laborers, who migrated in large numbers to the North during the World War and for a number of years later. They came in response to a heavy demand. Manufacturers in the iron and steel and other industries found the old standard of European labor being broken down to some extent by emigration of workers back to their native lands. The Mexican and Negro laborers, according to many employers, have not attained the standard of the European labor, production per man being less and therefore costs higher, two particularly important and vital matters in these days of narrow margin of profits or no profits at all.

Some believe that these classes of labor in time will compare favorably in efficiency with the Slav and other European workers who have so largely filled the laboring class in the iron and steel industry. Other manufacturers doubt that these workers from the South and from Mexico will ever equal the European laborer's unit production.

#### Shortened Supply of Labor

The new immigration law has had a profound effect on European labor. It has so greatly reduced the number of immigrants from that section of the world that in the first 10 months the law was in effect nearly 17,000 more common laborers left the country than were admitted as immigrants. Common laborers to the number of 27,908 entered the country during this 10-month period, as against 97,886 during the same period in the previous year, yet 44,750 laborers left the country during the same time, so that there was an actual loss of 16,842 laborers.

Decrease in net immigration of all classes was 71.4 per cent. The total number of persons admitted was 242,965 compared with 637,602 during the same period of the previous year, the decline in total immigration being 62 per cent. Departures in the same period amounted to 78,578, compared with 63,324 a year ago, so that the net immigration during the 10 months that the law has been in effect was 164,378, as against 574,278 during the corresponding 10 months of the preceding year.

It is claimed that the laborers admitted under the new immigration law represent a higher class than the average entered under the older laws. Also the point has been made that the decrease in the labor supply

has brought about more efficient methods of production, through improved machinery and other means. Even on the farm, it is stated, the decline in labor supply has not affected production adversely. On the contrary, it was pointed out, in 1920 there were 1,500,000 fewer men engaged in farm work than in 1910, yet in 1920 the crop production was greater than in 1910. While this was due partly to the fact that crop conditions were better in 1920 than in 1910, at the same time this was a remarkable showing for more and better farm machinery.

### Steel Treaters to Hold Symposium on Hardness

An important session of the seventh annual convention of the American Society for Steel Treating at Cleveland, Sept. 14 to 18, will be a symposium on hardness, scheduled for Thursday afternoon, Sept. 17, at the Hollenden Hotel. The program of papers follows:

"English Hardness Testing Machine of the Brinell Principle," by Prof. O. W. Boston, University of Michigan.

"Checking Brinell Machines," by Capt. S. N. Petrenko, Bureau of Standards.

"Some Comparisons Between the Rockwell and Brinell Hardness," by R. C. Brumfield, materials testing laboratory, Cooper Union, New York.

"Hardness of Cold Rolled Nickel," by Dr. S. R. Williams, director of laboratory, Amherst College.

"The Hardness and Toughness of High-Speed Steel as Affected by the Heat Treatment," by Robert K. Barry, Barry Co., Muscatine, Iowa.

"Stress-Strain Curves and the Characteristics which are Associated with Hardness," by H. P. Hollnagel, Thomson Research Laboratory, General Electric Co., West Lynn, Mass.

### Refractories Users Not Buying Very Far Ahead

PITTSBURGH, Aug. 17.—There is no tendency on the part of makers of iron and steel to anticipate their refractories requirements, and while there is a steady movement of the various kinds of brick, productive capacity is not taxed in supplying it. Prices are maintained, however, because there is no idea that concessions would create business and the claim is made that present prices are not high in relation to producing costs. Prices are given on page 507.

### Frick Company Firing Up Coke Ovens

UNIONTOWN, PA., Aug. 15.—Announcement was made this week of the firing of 265 ovens at plants of the H. C. Frick Coke Co. This is the first order for firing ovens for several months and is believed to be the forerunner of similar orders to follow shortly. Three plants were affected by the order this week. The Lincoln Coal & Coke Co. has ordered 100 ovens lighted.

There has been a noticeable increase during the past week in the number of inquiries for coal. The developments have brought a distinctly optimistic tone to the Connellsville coke region.

# 19,158,350 Tons of Pig Iron in First Half

Special Statistical Bulletin No. 4 of the American Iron and Steel Institute shows that the production of pig iron in the United States for the first half of 1925 was 19,158,350 gross tons, an increase of 9.4 per cent over the 17,514,485 tons for the first half of 1924, and

an increase of 37.9 per cent over the 13,891,305 tons in the second half of 1924. The production of charcoal pig iron in the first half of 1925 was 97,132 tons, or somewhat less than the figures for the two preceding half years. The tables follow:

## HALF-YEARLY OUTPUT OF PIG IRON BY STATES.

### HALF-YEARLY PRODUCTION OF ALL KINDS OF PIG IRON.

States.	Blast furnaces *			Production—Gross tons. (Includes spiegeleisen, ferro-mang., ferro-silicon, ferro-phosphorus, etc.)		
	In blast Dec. 31, 1924.	June 30, 1925.		First half of 1924.	Second half of 1924.	First half of 1925.
		In.	Out.			Total.
New York.....	15	10	17	27	1,212,276	801,397
New Jersey.....	0	0	4	4		
Pennsylvania.....	87	60	80	140	6,143,942	4,925,037
Maryland.....	5	4	2	6		
Virginia.....	3	2	15	17	345,470	310,689
Alabama.....	23	24	17	41	1,392,340	1,381,485
Texas.....	0	0	1	1		
West Virginia.....	3	3	1	4		
Kentucky.....	1	1	6	7	361,903	206,128
Mississippi.....	0	0	1	1		
Tennessee.....	2	2	13	15	65,476	72,515
Ohio.....	49	46	28	74	4,136,401	3,278,638
Illinois.....	18	15	10	25	1,518,962	1,081,902
Indiana.....	14	14	3	17		
Michigan.....	10	10	2	12	1,862,202	1,488,183
Wisconsin.....	1	1	5	6		
Minnesota.....	1	2	1	3	235,253	122,018
Missouri.....	0	0	3	3		
Iowa.....	0	0	0	0	240,260	223,313
Colorado.....	2	3	2	5		
Utah.....	1	1	0	1		
Total.....	235	198	211	409	17,514,485	13,891,305
						19,158,350

\* Completed and rebuilding.

### HALF-YEARLY PRODUCTION OF COKE PIG IRON.\*

New York.....	15	10	16	26	1,212,276	801,397	1,148,532
New Jersey.....	0	0	4	4			
Pennsylvania.....	87	60	77	137	6,143,942	4,925,037	6,651,221
Maryland.....	5	4	2	6			
Virginia.....	3	2	15	17	345,470	310,689	434,465
Texas.....	0	0	1	1			
Alabama.....	22	24	14	38	1,384,963	1,377,646	1,435,411
West Virginia.....	3	3	1	4			
Kentucky.....	1	1	6	7	361,903	206,128	324,045
Tennessee.....	2	1	11	12	65,476	71,513	40,726
Ohio.....	49	46	28	74	4,136,401	3,278,638	4,528,831
Illinois.....	18	15	10	25	1,518,962	1,081,902	2,008,260
Indiana.....	14	14	3	17			
Michigan.....	4	4	0	4	1,850,946	1,482,310	2,090,654
Wisconsin.....	1	1	4	5			
Minnesota.....	1	2	1	3			
Missouri.....	0	0	2	2			
Iowa.....	0	0	0	0	386,354	251,127	398,473
Colorado.....	2	3	2	5			
Utah.....	1	1	0	1			
Total.....	228	191	197	388	17,406,693	13,786,387	19,061,218

\* Includes pig iron and ferro-alloys made with electricity, electricity and coke, etc.

### HALF-YEARLY PRODUCTION OF ANTHRACITE AND MIXED ANTHRACITE AND COKE PIG IRON.

Pennsylvania .....	0	0	2	2			
Total.....	0	0	2	2			

### HALF-YEARLY PRODUCTION OF CHARCOAL PIG IRON.

New York.....	0	0	1	1			
Pennsylvania.....	0	0	1	1			
Alabama.....	1	0	3	3			
Tennessee.....	0	1	2	3			
Mississippi.....	0	0	1	1			
Michigan.....	6	6	2	8			
Wisconsin.....	0	0	1	1			
Missouri.....	0	0	1	1			
Total.....	7	7	12	19	107,792	104,918	97,132

### TOTAL PRODUCTION OF PIG IRON ACCORDING TO FUEL USED.

Coke*.....	228	191	197	388	17,406,693	13,786,387	19,061,218
Anthracite*.....	0	0	2	2			
Charcoal.....	7	7	12	19	107,792	104,918	97,132
Total.....	235	198	211	409	17,514,485	13,891,305	19,158,350

\* Includes pig iron and ferro-alloys made with electricity, electricity and coke, etc.

† Includes mixed anthracite and coke pig iron.

## HALF-YEARLY OUTPUT OF PIG IRON BY GRADES.

### HALF-YEARLY PRODUCTION OF BASIC PIG IRON.

States	First half of 1924.	Second half of 1924.	First half of 1925.
New York.....	352,735	341,663	478,890
Pennsylvania—Allegheny County	1,624,006	1,431,281	1,887,993
Other counties.....	1,738,466	1,460,974	2,004,579
West Virginia, Alabama, Kentucky.....	815,328	786,398	869,341
Ohio.....	1,839,902	1,479,279	2,022,982
Indiana, Illinois.....	2,094,777	1,539,619	2,710,902
Mich., Minn., Mo., Colorado, Utah.....	312,518	182,066	283,467
Total.....	8,777,732	7,221,280	10,258,154

### HALF-YEARLY PRODUCTION OF BESSEMER AND LOW-PHOSPHORUS PIG IRON.

States	First half of 1924.	Second half of 1924.	First half of 1925.
Pennsylvania.....	1,993,070	1,367,063	2,000,914
New York, Md., West Virginia, Alabama.....	610,882	315,956	565,063
Ohio.....	1,584,839	1,314,025	1,693,303
Indiana, Illinois.....	600,153	386,309	602,788
Total.....	4,788,944	3,383,353	*4,862,068

\* Includes 88,884 tons of low-phosphorus pig iron.

### HALF-YEARLY PRODUCTION OF FOUNDRY PIG IRON AND FERRO-SILICON.

States	First half of 1924.	Second half of 1924.	First half of 1925.
New York, New Jersey.....	577,021	340,124	441,032
Pennsylvania.....	509,931	466,122	503,059
Maryland, Va., West Va., Ky., Tenn.....	154,510	151,468	147,251
Alabama.....	710,073	690,591	705,671
Ohio.....	440,861	302,969	428,021
Indiana, Illinois.....	194,467	154,459	204,639
Michigan.....	307,988	318,733	279,809
Wis., Minn., Iowa, Mo., Colorado, Utah.....	161,437	142,370	158,148
Total.....	3,066,288	2,566,836	*2,867,630

\* Includes 130,675 tons of ferro-silicon.

### HALF-YEARLY PRODUCTION OF MALLEABLE PIG IRON.

States	First half of 1924.	Second half of 1924.	First half of 1925.
New York.....	89,274	33,924	104,018
Pennsylvania.....	36,851	34,009	51,192
Ohio.....	207,191	154,923	297,620
Kentucky, Indiana, Illinois, Mich., Minn.....	175,263	181,723	330,191
Total.....	508,579	464,579	783,021

### HALF-YEARLY PRODUCTION OF FORGE PIG IRON.

States	First half of 1924.	Second half of 1924.	First half of 1925.
New Jersey, Pennsylvania, Virginia.....	84,618	65,247	80,887
Alabama.....	14,231	15,064	23,682
Ohio.....	58,861	17,940	80,378
Total.....	157,710	98,251	184,947

### HALF-YEARLY PRODUCTION OF SPIEGELEISEN AND FERRO-MANGANESE.

States	First half of 1924.	Second half of 1924.	First half of 1925.
New York, New Jersey.....	14,341	1,416	

# Iron and Steel Markets

## A LARGER MARKET

### New Buying and Mill Operations Are Gradually Increasing

#### Less Firmness in Plates, Shapes and Bars —Coke Prices Stronger

While "forward" buying of steel is as truly absent as at any time in recent months, the volume of week-to-week purchases is creeping up and the scale of mill operations tends to increase.

With this further gain in orders there are signs of less firmness in prices of the three heavier forms of finished steel—plates, shapes and bars. It has happened before, following a dull period such as the industry has had since March, that prices in these three lines are less easily maintained when more business comes in sight.

Counting the July output of steel ingots as a 68 per cent operation, based on a total capacity of 54,000,000 tons a year, the industry is now running at more than a 70 per cent rate, with the probability of a 72 per cent average for the month of August. For August of last year the rate was 56 per cent as against 41.5 per cent in July.

The early starting of two additional blast furnaces of the Carnegie Steel Co. is practically decided on. Pittsburgh and Youngstown steel companies are now on a 70 per cent basis, compared with 65 per cent in July. At Chicago the leading independent company is now producing at 80 per cent of its ingot capacity and the leading interest at 75 per cent.

Having bridged the summer months with little help from the railroads, steel producers look for a September demand from that source. Encouragement is taken from several items of the present week: Inquiry from the New York Central for 75 locomotives; an expected order for 750 cars for the Gulf Coast Lines; bids on 1000 box cars for the Illinois Central; pending inquiry for 250 ballast cars for the Great Northern, and an order for 800 mine cars placed with Bethlehem. The Great Northern has divided 15,000 tons of track supplies among several mills.

Chicago mills stress the improved demand from farm equipment manufacturers, and the automobile trade, on the basis of increased farmer buying power, plans for large requisitions of steel. Specifications from Detroit this month have been greater than the mills had counted on.

New York, Chicago and California continue active in structural steel lettings and inquiries. The largest award of the week is 6000 tons for transmission towers for the Southern California Edison Co. Fabricated steel bookings in July represented 82 per cent of capacity, against 87 per cent in June, but July shipments were 86 per cent and those for June, 79 per cent.

The keener competition developed this month in bars and structural shapes is more marked in territory in which Pittsburgh and Ohio mills must absorb freight to get on an even footing with Chicago producers. More commonly bars are sold at 1.90c., Pittsburgh.

Plate mill schedules are cut down by the low rate of car plant operation, and the 1.80c., Pittsburgh, price has given way to 1.75c. on Eastern business. The Interlake Steamship Co. has placed two ore vessels with Lake shipyards, the steel amounting to 10,000 tons.

An Ohio mill has bought 5000 tons of slabs at \$32 to \$32.50, Youngstown. In a market practically untested for some weeks, sellers had been asking \$35.

Pig iron markets give varying reports on prices—greater firmness in the Philadelphia district, due in part to August sales of 35,000 tons of basic, but in most centers indications that production fully meets demand. A 5000-ton basic sale at Pittsburgh shows that the Valley furnace level is not yet above \$18.

Coke prices are stronger on anthracite strike prospects. Spot furnace coke is now \$3.20 to \$3.25 against \$2.90 to \$3 a week ago. However, there is no little idle capacity that can be brought into line, and there is the prospect that the low freight rates just ordered on low volatile coal may cause it to figure more largely than coke as a substitute for hard coal.

A French Mannesmann mill has taken an order for 4000 tons of oil well casing from the Nippon Oil Co., Japan, in competition with American pipe mills.

At Detroit this week the French cast iron pipe plant that has figured in so many municipal contracts in the past year, often as low bidder, was underbid by domestic makers by nearly \$4 a ton. Bids were taken on more than 12,000 tons.

Marking the lowest point in three years, THE IRON AGE composite price for finished steel is at 2.396c. per lb. this week, compared with 2.439c. in the four preceding weeks. Not since Aug. 15, 1922, has the figure been so low.

THE IRON AGE pig iron composite price advanced 4c. to \$19.04 this week, compared with \$19.46 one year ago and \$25.29 two years ago.

## Pittsburgh

### Steel Buying Increasing But Prices Still Weak—Outlook Promising

PITTSBURGH, Aug. 18.—Forward buying of steel still is absent and yet the day-to-day purchases continue to increase in volume and the tendency of steel works and mill operations is upward. The Carnegie Steel Co. last week reached an ingot output of 70 per cent of capacity and the general average of this and nearby producing centers is right around that rate. In July the production did not exceed 65 per cent of capacity. There is renewed talk that the Carnegie Steel Co. will at an early date put on two additional blast furnaces, although formal instructions have not been issued. Recent starting up of the second blast furnace at the Wheeling works of the National Tube Co. gives that company 100 per cent operation of its blast furnaces and reflects the excellent market that exists in steel pipe.

It is interesting to note that all steel consumptive channels, with the exception of the railroads, are open,

## A Comparison of Prices

**Advances Over the Previous Week in Heavy Type, Declines in Italics**  
**At date, one week, one month, and one year previous**

### For Early Delivery

Pig Iron, Per Gross Ton:	Aug. 18, 1925	Aug. 11, 1925	July 21, 1925	Aug. 19, 1924	Sheets, Nails and Wire, Per Lb. to Large Buyers:	Aug. 18, 1925	Aug. 11, 1925	July 21, 1925	Aug. 19, 1924
No. 2X, Philadelphia†... \$21.76	\$21.51	\$21.26	\$21.76		Sheets, black, No. 28, Pgh.	3.15	3.15	3.15	3.50
No. 2, Valley Furnace†... 18.50	18.50	18.50	19.00		Sheets, black, No. 28, Chicago dist. mill...	3.30	3.30	3.30	...
No. 2, Southern, Cin'tif. 22.55	22.55	22.05	21.55		Sheets, galv., No. 28, Pgh.	4.20	4.20	4.20	4.60
No. 2, Birmingham, Ala.†. 18.00	18.00	18.00	17.50		Sheets, galv., No. 28, Chicago dist. mill...	4.35	4.35	4.30	...
No. 2 foundry, Chgo furn.* 20.50	20.50	20.50	20.50		Sheets, blue, 9 & 10, Pgh.	2.30	2.30	2.30	2.65
Basic, del'd, eastern Pa... 20.50	20.50	21.50	20.00		Sheets, blue, 9 & 10, Chicago dist. mill...	2.40	2.40	2.40	...
Basic, Valley furnace.... 18.00	18.00	18.00	19.00		Wire nails, Pittsburgh dist. mill...	2.65	2.65	2.65	2.80
Valley Bessemer, del. Pgh. 20.76	20.76	20.76	21.76		Plain wire, Pittsburgh dist. mill...	2.50	2.50	2.50	2.55
Malleable, Chicago furnace* 20.50	20.50	20.50	20.50		Plain wire, Chicago dist. mill...	2.55	2.55	2.55	...
Malleable, Valley ..... 18.50	18.50	18.50	19.00		Barbed wire, galv., Pgh.	3.35	3.35	3.35	3.50
Gray forge, Pittsburgh... 19.76	19.76	19.76	20.26		Barbed wire, galv., Chicago dist. mill...	3.40	3.40	3.40	...
L. S. charcoal, Chicago... 29.04	29.04	29.04	29.04		Tin plate, 100 lb. box, Pgh.	\$5.50	\$5.50	\$5.50	\$5.50
Ferromanganese, furnace... 115.00	115.00	115.00	95.00						
Rails, Billets, etc., Per Gross Ton:									
O.-h. rails, heavy, at mill. \$43.00	\$43.00	\$43.00	\$43.00						
Bess. billets, Pittsburgh... 35.00	35.00	35.00	38.00						
O.-h. billets, Pittsburgh... 35.00	35.00	35.00	38.00						
O.-h. sheet bars, P'gh... 35.00	35.00	35.00	38.00						
Forging billets, base, P'gh. 40.00	40.00	40.00	43.00						
O.-h. billets, Phila..... 40.30	40.30	40.30	43.17						
Wire rods, Pittsburgh.... 45.00	45.00	45.00	46.00						
Skelp, gr. steel, P'gh, lb.. 1.90	1.90	1.90	2.00						
Light rails at mill..... 1.60	1.60	1.60	1.85						
Finished Iron and Steel,									
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents					
Iron bars, Philadelphia... 2.17	2.17	2.22	2.42						
Iron bars, Chicago..... 1.90	1.90	1.95	2.15						
Steel bars, Pittsburgh.... 1.90	2.00	2.00	2.10						
Steel bars, Chicago..... 2.10	2.10	2.10	2.10						
Steel bars, New York.... 2.24	2.34	2.34	2.44						
Tank plates, Pittsburgh.. 1.80	1.90	1.90	1.90						
Tank plates, Chicago.... 2.10	2.10	2.10	2.15						
Tank plates, New York... 2.14	2.14	2.14	2.09						
Beams, Pittsburgh..... 1.90	2.00	2.00	2.00						
Beams, Chicago..... 2.10	2.10	2.10	2.15						
Beams, New York..... 2.24	2.24	2.34	2.34						
Steel hoops, Pittsburgh... 2.40	2.40	2.40	2.60						
*The average switching charge for delivery to foundries in the Chicago district is 61c. per ton.									
†Silicon, 1.75 to 2.25. ‡Silicon, 2.25 to 2.75.									

\*The average switching charge for delivery to foundries in the Chicago district is 61c. per ton.

†Silicon, 1.75 to 2.25. ‡Silicon, 2.25 to 2.75.

On export business there are frequent variations from the above prices. Also, in domestic business, there is at times a range of prices on various products, as shown in our market reports on other pages.

### THE IRON AGE Composite Prices

Aug. 18, 1925, Finished Steel, 2.396c. Per Lb.

Based on prices of steel bars, beams, tank plates, plain wire, open-hearth rails, black pipe and black sheets. These products constitute 88 per cent of the United States output of finished steel.

{ One week ago, 2.439c.  
 One month ago, 2.439c.  
 One year ago, 2.510c.  
 10-year pre-war average, 1.689c.

Aug. 18, 1925, Pig Iron, \$19.04 Per Gross Ton

Based on average of basic and foundry irons, the basic being Valley quotation, the foundry an average of Chicago, Philadelphia and Birmingham.

{ One week ago, \$19.00  
 One month ago, 18.96  
 One year ago, 19.46  
 10-year pre-war average, 15.72

High	1923	1924	1925	1925	1924	1923
	2.824c. April 24	2.789c., Jan. 15	2.560c., Jan. 6	Finished Steel	1925	1924
	\$30.86, March 20	\$22.88, Feb. 26	\$22.50, Jan. 13	Pig Iron	2.396c., Aug. 18	2.460c., Oct. 14

and the trade is slow to relinquish the notion that there must soon be some buying of railroad cars and locomotives. Hope for business rests chiefly on the poor condition of many of the cars now in use, but there is also the suggestion that it is not for a lack of inquiry on the part of the railroads, so much as an unwillingness on the part of car builders to meet the price ideas of the railroads, that a good deal more business is not being placed.

There is positive optimism with regard to the outlook for purchases of steel articles by the farmers and the recent price reductions in crude oil and gasoline do not yet appear to have materially affected the demand for oil well pipe. The structural steel business is holding up in good fashion and the rush of demand for tin plate is unabated. Producers of the latter are operating at full physical capacity or about 90 per cent

of theoretic capacity and the common report is that business is sufficient to sustain that gait through September.

While 2c. still is the ruling price on small tonnages of bars and shapes within the Pittsburgh district, it is no longer disputed that on worth while lots, especially from outside consuming points, 1.90c. is being done and a similar concession from recent plate prices also is noted. The desire of the mills for orders of a size that will build up their schedules is pretty strong and there is the additional factor that the Pittsburgh district is not providing Pittsburgh mills with sufficient business to obviate the necessity of going far afield for orders. Not much success yet has attended the effort to advance black and galvanized sheet prices but in other directions a fair degree of price steadiness is observed.

Coke prices have advanced about 25c. a ton since a week ago under the combined influences of some large purchases of furnace coke by a local steel company, and some purchases of coke for stock as a safeguard against higher prices that likely would follow a suspension of the anthracite coal mines and the substitution of coke for anthracite coal. Coke for heating purposes has sold as high as \$3.25 per net ton at ovens and producers now want the same price for furnace grade. It is possible that suggestions of still higher prices may be realized but there is also the possibility that any further advance would result in the starting up of idle capacity and as no blast furnaces using beehive oven coke are starting up, it would take a big demand for domestic coke to sustain prices. The scrap market has quieted down following the recent buying movement but supplies still are scant and prices are firm. The pig iron market shows no activity and prices merely are steady.

**Pig Iron.**—The American Steel Foundries is reported to have placed 5000 tons of basic iron for shipment to its Alliance, Ohio, works over the remainder of the year, shipments to start with next month at \$18, Valley furnace. This is the only important sale of the past week and incidentally establishes that the market will not yet stand a higher price than \$18, Valley, although several producers have been talking of \$18.50 for last quarter shipments and on this inquiry named that price. Sales otherwise have been of small tonnages and except for occasional waiving of silicon differentials on foundry iron, the business has been done at quotations. The furnace of the A. M. Byers Co. at Girard, Ohio, has been blown out since a week ago, and the Youngstown Sheet & Tube Co. is putting off one of its East Youngstown stacks for relining, but it is starting up one of the old Brier Hill furnaces. The total number of blast furnaces in production in this and nearby districts remains at 68 out of a grand total of 135. The Reliance Coke & Furnace Co. will probably start its Claire furnace, Sharpsville, Pa., about the middle of September.

We quote Valley furnace, the freight rate for delivery to the Cleveland or Pittsburgh district being \$1.76 per gross ton:

Basic . . . . .	\$18.00
Bessemer . . . . .	19.00
Gray forge . . . . .	18.00
No. 2 foundry . . . . .	18.50
No. 3 foundry . . . . .	18.00
Malleable . . . . .	18.50
Low phosphorus, copper free . . . . .	\$27.75 to 28.00

**Ferroalloys.**—Steel companies in this and adjacent territory are sparing buyers of ferroalloys. Most of them are covered against their requirements for the next few months on ferromanganese, and the coverage runs to the end of the year on 50 per cent ferrosilicon. Current demands are from users who do not buy very far ahead and they run to small lots. There has been no change in quotations, but there are intimations that ferromanganese is not absolutely firm at \$115, seaboard. Spiegeleisen prices are subject to some shading on tonnages of more than a carload. Prices are given on page 507.

**Semi-Finished Steel.**—On billets, slabs and sheet bars the market here is regarded as \$35, Pittsburgh or Youngstown. Open market activities are limited, since most of the important consumers are drawing against agreements made earlier in the year and subsequently extended verbally or otherwise. Demands, whether in the form of orders or specifications, are no strain upon the productive ability of makers and the market is steady rather than strong at that basis. Makers of forging billets here disclaim prices below \$40, base, for ordinary analyses, but there is conflicting testimony as to the exaction of the full \$5 a ton extra named on billets guaranteed for the purpose for which they are intended. Wire rods move very steadily, with no change in prices. Skelp still is easy to buy at 1.90c. Prices are given on page 507.

**Wire Products.**—Evidence is lacking that distributors are building up their stocks, but the frequency of orders and specifications suggests a consumption in excess of dealers' supplies and the continued steadiness of prices is counted upon to start a stocking demand before the fall is far advanced. Reports from the

agricultural districts indicate that the farmers are doing well this year and having in some cases cancelled and in many cases very materially reduced their indebtedness, they are expected to have money to spend on steel articles. Fence building no longer is essentially spring work, because the substitution of steel posts for wooden ones obviates the necessity that the ground shall be soft for digging the post holes. The prospect for good fence sales this fall is considered bright and as a stimulus to purchases spring terms have been announced under date of Aug. 17, several weeks earlier than usual. They provide 60 days net, with 2 per cent off for cash in 10 days from March 1, 1926, with the usual  $\frac{1}{4}$  of 1 per cent per month additional discount for payments made prior to March 1 next. Fence paid for promptly nets the buyer an extra 3 per cent, or about \$2 per ton, and the fact that fence prices are regarded as low would indicate the maintenance of the present levels. Wire mills in this district are on higher operating schedules and the average now is 60 per cent, as compared with less than 50 per cent in the early summer. Prices are given on page 506.

**Rails and Track Supplies.**—Standard rail inquiries are coming out in encouraging fashion, but local makers of light rails still find it necessary to put forth much sales effort to get even carload lot orders, and not much activity yet is noted in spikes and other rail accessories. Locally, there is good observance of quotations on the accessories, but the test of large demands is lacking. Prices are given on page 506.

**Tubular Goods.**—Two reductions each of 25c. per barrel have been made in the past week in prices of Pennsylvania crude oil and taken with reductions in other oil fields and in gasoline prices in most parts of the country, there has been some tendency to expect a curtailment of well drilling. This is not seen in the demands upon makers of oil and gas well pipe, which still is very brisk, and it is evident that the fluctuations in oil prices are due more to market manipulations than to changes in the fundamental supply and demand conditions. The National Tube Co. has taken the gas line for the Lone Star Gas Co. of 75 miles of 18-in. pipe, while the Commercial Natural Gas Co. line, embracing 35 miles of 8-in. and 25 miles of 6-in. pipe will be furnished by a Youngstown maker. The 60 miles of 8-in. pipe for the Petroleum Exploration Co. is yet to be placed. Butt-weld sizes of pipe are moving steadily and taken in the aggregate, this branch of the industry still is well engaged and has some backlog in the larger diameters. An estimate of 90 per cent of capacity operations is a close appraisal. The leading producer now has all 11 of its blast furnaces in production and the addition of a fourth butt-weld furnace at its Gary plant leaves only two lap-weld and one butt-weld units there to go into operation. Of the 17 pipe furnaces in the Youngstown district 13 are active, while of the 12 Pittsburgh furnaces, nine are making pipe. Boiler tubes are only moderately active, but seamless mechanical tubing is doing well. Discounts are given on page 506.

**Sheets.**—The week has brought no interesting changes in the situation, except possibly a materially greater demand from the farm equipment manufacturers, who already are beginning to feel the effects of the financial betterment among the farmers. One company has placed 2500 tons of galvanized sheets for September and October shipment and a similar order for later delivery is promised. In a general way demands are of the same character as recently, buyers holding to a policy of buying small lots at frequent intervals rather than placing their requirements well in advance. Prices show no change, with galvanized sheets still available at 4.20c. base, Pittsburgh, despite higher quotations, while deviations from quotations on other finishes still are occurring. Prices are given on page 506.

**Tin Plate.**—There is still enough business in tin plate and sufficient urgency about delivery to keep mill operations at the recent high rate, which with almost all companies was full physical capacity. The leading producer now reports enough business to sustain this

rate through September. Strictly new business is light, although there are a few export inquiries.

**Cold-Finished Steel Bars and Shafting.**—Demand is expanding, as there is in addition to a steady flow of orders from the automobile parts makers, a substantial tonnage from the agricultural implement manufacturers. The latter source promises to be a good one this fall. The ordinary tonnage price remains at 2.50c., base, Pittsburgh, but large tonnages, as usual, call for special consideration.

**Hot-Rolled Flats.**—It is unusual to find a maker of these lines who is not doing a satisfactory business and it is likewise the unusual to find that prices have been shaded. The market is active and firm. The cotton tie season is pretty well over so far as sales are concerned and it is now learned that the price was \$1.28 per 45-lb. bundle at Atlantic ports, and \$1.25 at Gulf ports, where foreign competition was sharpest. There was no carrying charge to Sept. 1. Last year, the price was \$1.40 at Atlantic ports and \$1.43 at Gulf ports, with a carrying charge of 1c per bundle per month after July 1. Prices are given on page 506.

**Cold-Rolled Strips.**—A firm stand by makers on prices appears to be helping rather than hurting business. There still are reports that less than 3.75c., base, Pittsburgh or Cleveland, can be done, but it is the experience of makers here that orders have come in at the full price from buyers who claimed to have lower quotations. August business to date has been well up to that of last month, which was not a poor one, on account of the well sustained automobile production.

**Steel and Iron Bars.**—Sales of steel bars still are being made at 2c., base, Pittsburgh, but it is now admitted that tonnages of more than ordinary size cannot be sold at higher than 1.90c., base. Large users are getting the latter price and the quotable market now is 1.90c. to 2c., base, according to the size of the order and the size of the purchaser. There is a very steady flow of orders and specifications but individual tonnages are not yet of a size that obviate frequent scheduling of the mills. Iron bars are holding at recent prices but a test of large demand is lacking. Prices are given on page 506.

**Structural Material.**—Only what might be regarded as retail lots of plain material now are bringing 2c., Pittsburgh, and then only for shipment within the Pittsburgh area. Large buyers in this district are getting steel at 1.90c., base, and on business outside of this district local mills find a higher price impossible to obtain. Structural steel companies here report a good pending business but that investors are slow to close. Fabricating companies say that prices are low and unprofitable but investors say that the prices are still too high for the amount of money they have to spend. Plain material prices are given on page 506.

**Alloy Steel Bars.**—Large users are buying sparingly of all grades except possibly of ordinary 3 per cent nickel steel bars. Lately there has been a substantial revival in the demand for that grade from those making automobile forgings. Silicon manganese steel is doing fairly well. Prices are not overly firm and actually are weaker on some of the nickel chromium series. Prices are given on page 507.

**Fluorspar.**—Domestic producers seem to be making a determined effort to establish \$16 per net ton at mines as the actual sales price of material analyzing 85 per cent and over in calcium fluoride and not over 5 per cent in silica. Sales were made a few weeks ago as low as \$15, but on an inquiry in the past week for 500 tons \$15.50 was the minimum quotation. Only on small lots, however, is \$16 yet obtainable. Prices are given on page 507.

**Plates.**—On this product 1.90c., Pittsburgh, has become merely the price on very small tonnages for shipment within the Pittsburgh area. To fill mill schedules it has been necessary for producers here to go outside for business and in competition with outside mills 1.80c., Pittsburgh, appears to be as much as they can obtain. In the East as low as 1.75c., Pittsburgh, has been encountered. One large railroad car builder in this district is entirely idle and only a few railroad passenger cars keep the other builder from complete

suspension. The lack of railroad car buying is seriously felt here. Prices are given on page 506.

**Bolts, Nuts and Rivets.**—Bolt and nut makers in this district are having a steady business, but buyers continue to order frequently in small lots and manufacturers are dependent upon daily orders for their operating schedules. Prices are firm. Rivets are slow and makers are very glad to get orders for early shipment. Prices and discounts are given on page 507.

**Coke and Coal.**—The local steel company which recently started two blast furnaces and became an active buyer of furnace coke has by its purchases cleaned up the available supply of spot tonnages, and this in conjunction with a brisk demand for coke for heating purposes and a willingness on the part of contract buyers to take more than their regular quotas has materially strengthened prices. The market on spot furnace grade now is quotable at \$3.20 to \$3.25 per net ton at ovens against \$2.90 to \$3 a week ago. Since it looks now as though there would be a suspension of the anthracite mines on Sept. 1, and possibly a strike, price ideas of coke producers, who figure that much coke will be wanted as a substitute for hard coal, are strongest. Seeing that railroad freight rates have been ordered reduced on low volatile coal from West Virginia and that this change will mean that an adjustment downward of rates from central Pennsylvania, iron producers figure that low volatile coal will figure more heavily as a hard coal substitute than coke and express the opinion that if there is much increase in coke production there will not be a sufficient demand to sustain higher prices. A good deal of idle capacity in the Connellsville district already is being made ready for starting up and this is counted on to prevent a runaway market in coke. Foundry coke has advanced about 25c. a ton since a week ago, chiefly on fears of a shortage in the event that hard coal mines are closed down on Sept. 1. There is a stronger market for low volatile West Virginia coal, which has advanced from \$2 per net ton at mines for mine run grade to \$2.50, but a larger market for western Pennsylvania coal has not yet produced any definite advance in prices. Prices are given on page 507.

**Old Material.**—Consumer buying of scrap has been lacking in the past week, but prices are holding on the steel works grades because there is no great outpouring of industrial scrap and what dealers own is too costly to come upon the market at present levels. It is believed doubtful that scrap prices in general in the next 30 days will change much either way. Dealers figure on enlarged steel works operations to create a big demand and much higher prices, but after giving weight to all factors it is difficult to figure steel works operations and the use of scrap as likely to be as heavy during the next few months as in the first quarter of this year. It will be recalled the scrap market showed its greatest weakness in that quarter. Another factor to be observed is that the steel companies have considerable latitude as to the mix of scrap and pig iron in the charge and the cost of the materials is the governing factor.

We quote for delivery to consumers' mills in the Pittsburgh and other districts taking the Pittsburgh freight rate as follows:

Per Gross Ton
Heavy melting steel ..... \$19.00 to \$19.50
No. 1 cast, cupola size ..... 17.50 to 18.00
Rails for rolling, Newark and Cambridge, Ohio; Cumberland, Md.; Huntington, W. Va., and Franklin, Pa. ....
Compressed sheet steel ..... 17.50 to 18.00
Bundled sheets, sides and ends. 16.50 to 17.00
Railroad knuckles and couplers. 21.00 to 21.50
Railroad coil and leaf springs. 21.00 to 21.50
Low phosphorus blooms and billet ends ..... 22.00 to 22.50
Low phosphorus plate and other material ..... 21.00 to 21.50
Railroad malleable ..... 19.00 to 19.50
Steel car axles ..... 21.00 to 21.50
Cast iron wheels ..... 17.50 to 18.00
Rolled steel wheels ..... 21.00 to 21.50
Machine shop turnings ..... 15.00 to 15.50
Short shoveling turnings ..... 15.00 to 15.50
Sheet bar crops ..... 20.00 to 20.50
Heavy steel axle turnings ..... 16.50 to 17.00
Short mixed borings and turnings. 14.00 to 14.50
Heavy breakable cast ..... 16.50 to 17.00
Stove plate ..... 14.00 to 14.50
Cast iron borings ..... 15.00 to 15.50
No. 1 railroad wrought ..... 15.50 to 16.00
No. 2 railroad wrought ..... 19.00 to 19.50

## Chicago

### Steel Bookings Exceed Shipments but Competition Keen—Pig Iron Firm

CHICAGO, Aug. 18.—Although lack of railroad equipment buying is still a cause for much concern, the volume of business coming from other sources is of encouraging proportions. The leading local independent is producing at 80 per cent of ingot capacity and the foremost interest is maintaining a 75 per cent rate. Twenty-two steel works blast furnaces remain active out of a total of 35. The Youngstown Sheet & Tube Co., however, expects to blow in its second stack at Indiana Harbor about Sept. 1.

Current bookings in the heavier products, such as plates, shapes and bars, continue to exceed shipments, but the improvement in business has not been so marked as entirely to eliminate price flexibility. Competition is still keen and in some instances mills east of Chicago are absorbing freight to meet local quotation. Improved buying apparently reflects increased consumption rather than heavier forward contracting. In some lines, notably in wire products, contracts are being closed, but in general buyers are still timid about committing themselves ahead. Often buyers who appear to be interested in contracts really want options, that is, the privilege of specifying or not, as they see fit.

**Pig Iron.**—The market is not so active as during the first week of the month, but buying is proceeding in a quiet way and total merchant bookings thus far in August are estimated at 130,000 tons. Meanwhile shipments are liberal, with the likelihood that they will show a gain over those of July. No changes in merchant furnace output are contemplated and, in the absence of railroad equipment buying upon which some foundries are dependent, it would appear that present production substantially balances demand. It is still believed that the next change in prices will be upward, but there is disagreement as to when it can be expected. The anthracite strike threat has caused greater activity in the coal and coke markets and, if fuel prices advance, higher pig iron prices may follow. The high level of cast and malleable scrap prices has also had its effect on pig iron. Steel plants which sometimes have merchant iron to offer from their blast furnaces are now using a maximum of pig iron and a minimum of old material. Foundries, likewise, are using more pig metal in proportion to scrap. This situation, of course, may change, particularly if railroad offerings of scrap should show a material increase. An implement maker has closed for 3000 tons of foundry and malleable iron. A Wisconsin melter has placed 1500 tons of foundry, and an Indiana user has contracted for 400 tons. A local user is inquiring for 400 tons of foundry for October and November shipment. A local inquiry for 5000 tons of basic for Ohio delivery is still unclosed. No first quarter buying is reported in this market, but a Hamilton, Ohio, melter has bought 3300 tons of foundry for that delivery from the Toledo furnace. Detroit and Toledo producers are still quoting \$19, base furnace, with the result that it is difficult for Chicago sellers to penetrate very far in the territory east of here. The Thomas furnace, Milwaukee, is booked for 60 days ahead and has advanced its prices to the basis of \$21, Chicago furnace. No sales are yet reported.

phorus, malleable and basic iron are f.o.b. local furnaces and do not include an average switching charge of 61c. per ton. Other prices are for iron delivered at consumers' yards.

Northern No. 2 foundry, sil. 1.75 to 2.25	\$20.50
Northern No. 1 foundry, sil. 2.25 to 2.75	21.00
Malleable, not over 2.25 sil.	20.50
High phosphorus	20.50
Lake Superior charcoal, averaging sil. 1.50, delivered at Chicago	29.04
Southern No. 2 (all rail)	\$23.51 to 24.51
Southern No. 2 (barge and rail)	22.68
Low phosph., sil. 1 to 2 per cent, copper free	31.20
Silvery, sil. 8 per cent	\$29.79 to 30.79
Electric ferrosilicon, 14 to 16 per cent	44.50 to 44.79

**Ferroalloys.**—Activity in spiegeleisen is confined to carlot sales. Small tonnages are bringing \$33, Eastern furnace, or \$40.76 delivered, while it is said that large tonnages can still be bought at \$3 less.

We quote 80 per cent ferromanganese, \$122.56, delivered; 50 per cent ferrosilicon for 1925 delivery, \$85, delivered; spiegeleisen, 18 to 22 per cent, \$37.76 to \$40.76, delivered.

**Plates.**—No new railroad car buying has developed and the steel for a number of orders recently placed has not yet been contracted for. The 17,500 tons required for the cars bought by the Missouri-Kansas-Texas and the Texas & Pacific is still pending. A considerable portion of the 65,000 tons required for the cars placed by the Chicago, Milwaukee & St. Paul early in June is also yet to be placed. Fully 15,000 tons of plates will be required for miscellaneous tank projects pending in the Southwest. The Magnolia Petroleum Co. has awarded oil storage tanks, requiring 2500 tons, for Beaumont, Tex., to an unnamed fabricator. A local mill has booked 15,000 tons of plates for tank work during the week. A gas holder, Stockton, Cal., 2500 tons, is a promising prospect in the plate fabricating field. Competition among producers of plates is very keen and prices are flexible, although not definitely on a lower level.

The mill quotation is 2.10c., Chicago. Jobbers quote 3.10c. for plate out of stock.

**Bars.**—While leading producers are making a strong effort to hold the local market on soft steel bars at 2.10c., Chicago, there are insistent reports of sales at \$2 a ton below that level. In a word, the situation is highly competitive, but it is not yet clear whether a general decline will eventually come. The improved bookings of a number of mills lend weight to the hope that the market will hold. A leading producer took 50 per cent more tonnage in the first 13 days of August than in the same period in July. Farm implement manufacturers are steadily becoming more active factors in the market and have closed for liberal tonnages. This industry takes an optimistic view of the future, but after following a cautious buying policy for several years finds it difficult to throw off its conservative habits. The Republic Rolling Mill Corporation, East Chicago, which has heretofore rolled bar iron only, is now also producing billet steel bars in sizes ranging from  $\frac{1}{2}$  in. to 6-in. rounds and equivalent weights in flats and squares. Bar iron demand from miscellaneous sources shows moderate improvement, but the lack of railroad buying is still keenly felt and mills find it difficult to accumulate more than a few weeks' backlog. The best that can be said is that prices are no weaker and here and there show some signs of stiffening. Rail steel bars are unchanged at 2c., Chicago, although occasional concessions are reported. Considerable tonnage is being sold for reinforcing purposes and demands from the implement trade are good. The orders of one mill from fence post manufacturers during the first half of this year were 70 per cent heavier than during the same period a year previous. Fall demand for fence posts is commencing to make itself felt. Bedstead business, on the other hand, is suffering a lull. The two Chicago Heights rail steel bar mills are still operating on double turn. Unabated demand from the automobile industry for alloy steel bars is reflected in the operations of the local independent producer of that product, which is at 100 per cent.

Mill prices are: Mild steel bars, 2.10c.; common bar iron, 1.90c. to 2c., Chicago; rail steel, 2c., Chicago and 2c., mill.

Jobbers quote 3c. for steel bars out of warehouse. The warehouse quotations on cold-rolled steel bars and shafting are 3.60c. for rounds and hexagons and 4.10c. for flats and squares; 4.15c. for hoops and 3.65c. for bands.

Jobbers quote hard and medium deformed steel bars at 2.60c.

**Structural Material.**—The outlook for structural work is regarded as promising. In Chicago and the West fully 100,000 tons is involved in pending and prospective projects. The South Park Board, Chicago, is taking figures on five bridges, requiring a total of 2500 tons. Among other fresh prospects are a plant building for A. O. Smith Corporation, Milwaukee, 1300 tons, and the Picadilly Theater, Chicago, 1200

tons. Competition for plain material is still very sharp and in some cases mills east of here have absorbed freight to meet local prices. Nevertheless, less is heard this week of irregularities in structural shapes than in plates and soft steel bars.

The mill quotation on plain material is 2.10c., Chicago. Jobbers quote 3.10c. for plain material out of warehouse.

**Wire Products.**—Contracting is slowly gathering momentum and tonnage booked is equal to that of the first week in August. As is to be expected, Southern jobbers are the first to cover their requirements, but the buying movement will undoubtedly swing up into the Eastern and Northern agricultural States in ensuing weeks. The territory tributary to Cincinnati, which has been particularly quiet, is commencing to show signs of life. Competition among mills is still keen, but the general price level has not been materially disturbed. Some producers, in fact, are not anxious to close contracts at present prices because they look for advances later in the year. Buyers, on the other hand, are beginning to recognize the need for larger and better balanced stocks. Mill output averages 60 per cent. For mill prices see page 506.

We quote warehouse prices f.o.b. Chicago: No. 8 black annealed wire, \$3.05 per 100 lb.; common wire nails, \$3.15 per kg.; cement coated nails, \$2.15 to \$2.20.

**Rails and Track Supplies.**—The New York Central has placed 1800 tons of rails with the Gary mill, this being an addition to a previous contract. Most of the local and Western roads are expected to enter the market shortly for rails and track supplies. In addition to its recent orders for 27,000 tons of rails, the Great Northern has distributed close to 15,000 tons of track supplies among various mills. Tie plates, angle bars, spikes and bolts were included in these orders. The Illinois Central has ordered 300,000 tie plates from the Sellers Mfg. Co. Tie plates are bringing \$45 a ton, f.o.b. mill. With signs pointing to better coal business, a revival in light rail demand is anticipated.

Standard Bessemer and open-hearth rails, \$43; light rails, rolled from billets, 1.80c. to 1.90c., f.o.b. maker's mill.

Standard railroad spikes, 2.90c. to 3c. mill; track bolts with square nuts, 3.90c. to 4c. mill; steel tie plates, 2.25c. to 2.35c., f.o.b. mill; angle bars, 2.75c., f.o.b. mill.

Jobbers quote standard spikes out of warehouse at 3.55c. base, and track bolts 4.55c. base.

**Bolts, Nuts and Rivets.**—Bolt demand is keeping up and discounts are holding. Rivets are weak, large rivets selling at as low as \$2.50, Chicago. On small rivets 70 and 10 and 5 off, Chicago, represents the top of the market and in extreme instances more than 75 off has been done. For mill prices see page 507.

Jobbers quote structural rivets, 3.50c.; boiler rivets, 3.70c.; machine bolts up to  $\frac{1}{2}$  x 4 in., 55 per cent off; larger sizes, 55 off; carriage bolts up to  $\frac{1}{2}$  x 4 in., 50 off; larger sizes, 50 off; hot-pressed nuts, squares, tapped or blanked, \$3.50 off; hot-pressed nuts, hexagons, tapped or blank, \$4 off; coach or lag screws, 60 per cent off.

**Cold-Rolled Strip.**—The best going price is 3.75c., Cleveland, or 4.05c., delivered Chicago.

**Sheets.**—One important mill is quoting 3.40c., mill, on black, and 4.40c., mill, on galvanized, or 3.45c. and 4.45c., delivered Chicago, respectively. The lower prices carried below, however, have not entirely disappeared. In general, producers are not yet ready to open their books for four quarter and when they do, expect to advance prices at least \$2 a ton. In some instances, on the other hand, certain mills have taken tonnages with deliveries extending beyond the third quarter. An implement maker, for example, placed 2000 tons of galvanized for shipment into October. The improvement in demand from the farm equipment manufacturers is particularly encouraging. Automobile makers also expect to profit by the improved financial status of the farmer. The local independent producer of sheets is operating at 80 per cent of capacity.

Chicago delivered prices from mill 3.35c. to 3.40c. for No. 28 black, 2.45c. to 2.50c. for No. 10 blue annealed and 4.40c. to 4.45c. for No. 28 galvanized. Delivered prices at other Western points are equal to the freight from Gary plus the mill prices, which are 5c. per 100 lb. lower than the Chicago delivered prices.

Jobbers quote f.o.b. Chicago: 3.50c. base for blue annealed, 4c. base for black, and 5c. base for galvanized.

**Cast Iron Pipe.**—Detroit took bids on 12,240 tons of 8, 12 and 24-in. yesterday. The tonnage was large and foreign competition was again encountered; consequently deep concessions under the general market were made. The United States Cast Iron Pipe and Foundry Co. was low bidder on 8-in. and 12-in., with a delivered price of \$44.45, the equivalent of \$36.53, base Birmingham. The same company was low bidder on the 24-in. on the basis of taking 50 per cent or all of the tonnage, its figure being \$43.30 delivered, or \$35.38, base Birmingham. The Lynchburg Foundry Co., which bid on 2500 tons only out of over 7000 tons of 24-in., had the lowest figure, \$42.60, delivered, equivalent to \$34.68, base Birmingham. B. Nicoll & Co., representing the French Pont-a-Mousson works, was underbid throughout, its figure on 500 tons of 12-in. having been \$46.45 delivered, the equivalent of \$38.53, base Birmingham. On the 24-in. its lowest bid on 1500 tons for shipment in 30 days was \$43.92 delivered, or the equivalent of \$36, base Birmingham. The United States Cast Iron Pipe & Foundry Co. will supply 3000 tons for Villa Park, Ill.; 850 tons for Franklin Park, Ill.; 300 tons for Fairmont, Minn.; 125 tons for Crystal Lake, Ill., and 100 tons for North Milwaukee, Wis. James B. Clow & Sons will furnish 170 tons for Evanston, Ill. The National Cast Iron Pipe Co. will supply 610 tons for Martinsville, Ill. Fairfield, Ill., took figures on 1000 tons of 10-in. yesterday. Newkirk, Okla., took bids on 1200 tons Aug. 17. Chicago will receive figures Aug. 24 on 868 tons of 12 and 16-in. Class B. Detroit will take bids Aug. 21 on 190 tons of 30 and 48-in. fittings. Pipe shops continue to book a considerable tonnage in small jobs and, in general, are booked two months ahead.

We quote per net ton f.o.b. Chicago, as follows:  
Water pipe, 4-in., \$53.20 to \$54.20; 6-in. and over, \$49.20 to \$50.20; Class A and gas pipe, \$4 extra.

**Reinforcing Bars.**—Building activity as measured by the reinforcing market shows no recession. Lettings are numerous, a large amount of work is pending, and many new projects continue to come up for bids. Section 11 of the South Water Street double decking project, Chicago, the Stevens Hotel, Chicago, and the Ford Avenue Bridge, St. Paul, Minn., involving a total of 4600 tons, are on the verge of being placed. These jobs, because of their size, have engendered keen competition on the basis of mill shipments. Warehouse prices on billet steel reinforcing bars remain at 2.60c. Chicago. Lettings include:

Great Northern Railway, 250 tons, to Concrete Steel Co.

Avalon Theater, Seventy-ninth Street near Stony Island Avenue, Chicago, 100 tons, to Concrete Engineering Co.

Highway bridge, Grand Rapids, Mich., 110 tons, to Concrete Steel Co.

Chicago Union Station Co., Adams Street viaduct, 140 tons, to American System of Reinforcing.

Standard Foundry Co., Racine, Wis., coreroom, 200 tons, to Kalman Steel Co.

Norman Bridge public school, Chicago, 150 tons, to Olney J. Dean & Co.

Fort Armstrong Hotel, Rock Island, Ill., 250 tons, to Kalman Steel Co.

Ford Avenue bridge, St. Paul, 1700 tons, to Kalman Steel Co.

Produce Market Administration Building, Chicago, 400 tons of rail steel, to Inland Steel Co.

East Gate Hotel, Chicago, 250 tons of rail steel to Inland Steel Co.

**Old Material.**—A local mill has paid \$16.75 per gross ton for a small tonnage of heavy melting, the most it could obtain at that price. The speculative element is still a strong factor in the market. Those who are in possession of scrap are holding it in anticipation of further advances and dealers continue to bid up prices in figuring on current railroad lists. There is an increasing consumer demand for low phosphorus grades, angle bars, short rails and malleable. An iron mill has purchased No. 1 wrought at \$16.75 per net ton delivered. Machine shop turnings have been affected by outside demand. A sale at \$15 per gross ton,

(Concluded on page 509)

## New York

### Pig Iron Buying at 20,000 Tons—Structural and Bar Prices Easier

NEW YORK, Aug. 18.—The inquiry of the General Electric Co. for pig iron for shipment in the fourth quarter and in the first three months of 1926 to its various plants is the largest that is now up in Eastern districts. While a total of 5000 tons is reported to be involved, some offices have been asked to quote on lots of several hundred tons. In the past week sales have been made at a little greater than the previous rate, one local firm having closed 6000 tons, while the estimated total for New York selling offices is 18,000 to 20,000 tons. One seller closed a 5000-ton contract and another one of 2500 tons. In the main, however, the transactions are of the 200-ton order. In this territory relatively little inquiry has come up for first quarter. One New England foundry is in the market for 1000 tons for that delivery. For Bridgeport, Conn., there is a 500-ton inquiry for No. 1 foundry iron. Some few sales of Virginia iron have been made, one company still maintaining \$24 at furnace as its price for No. 2 plain iron. Sales from Buffalo for Eastern delivery are reported at \$18.50 furnace for No. 2X. On Dutch iron, quotations have been made in the past week of \$21.50, duty paid, Eastern seaboard, for the equivalent of No. 2X iron. Indian iron is still offered at \$20.50.

We quote delivered in the New York district as follows, having added to furnace prices \$2.52 freight from eastern Pennsylvania, \$4.91 from Buffalo and \$5.44 from Virginia:

East. Pa. No. 2, sil.	1.75 to 2.25	\$22.52 to \$22.77
East. Pa. No. 1X fdy., sil.	2.75 to 3.25	23.02 to 23.52
East. Pa. No. 2X fdy., sil.	2.25 to 2.75	22.52 to 23.02
Buffalo, sil.	1.75 to 2.25	23.41 to 23.91
No. 2 Virginia, sil.	1.75 to 2.25	28.44

**Ferroalloys.**—Sales of ferromanganese continue in moderate volume, involving carload to 100-ton and larger lots. Total sales have probably been from 500 to 1000 tons in the last week. Inquiries also continue in moderate volume, involving several 100-ton lots. The delivery desired in each case is fairly early. The Spiegeleisen market is only moderately active at unchanged prices. Now and then there are sales of carload and small lots of 50 per cent ferrosilicon at \$85, delivered, but most consumers are still receiving the alloy on contracts made early this year.

**Warehouse Market.**—In total volume jobbers report August sales holding up well and the price structure is less ragged. Reinforcing bars are in good demand, but there is only fair activity in sheets, which appear to be settling with 3.90c. as minimum on black and 4.90c. on galvanized. Other lines are steady. Brass rod, sheet and tube have been marked up  $\frac{1}{4}$ c. For prices see page 526. We quote boiler tubes per 100 ft. as follows:

Lapwelded steel tubes, 2-in., \$17.33; seamless steel, 2-in., \$20.24; charcoal iron, 2-in., \$25; 4-in., \$37.

**Finished Iron and Steel.**—In the absence of any general buying movement in plates, shapes and bars, one or two of the larger companies have been endeavoring to find a level at which jobbers and other large buyers would place stock orders. A combination price of 1.80c., Pittsburgh, on plates, shapes and bars in lots of 1000 tons or more has been quoted in a few instances, although the general market remains at 2c. for bars, 1.90c. for shapes and 1.80c. for plates. The break in the steel bar price, mentioned last week, has become somewhat more in evidence, two or three companies having accepted attractive orders at 1.90c., Pittsburgh. Structural shapes range from 1.90c. to 2c., Pittsburgh, with one or two of the smaller Eastern mills quoting 2c. to 2.10c., f.o.b. mill. Apparently there is no shading of 1.80c. on plates, which is the ruling quotation with all Eastern mills. Aside from structural steel lettings there is no large buying in the market. Structural steel awards are fairly large, and the report of one of the leading mills is that tonnage so far in

August is fully up to that of July, which was one of the best months of the year in that commodity. Many large building projects are expected to come out for bids soon. The lack of important car business continues as one of the most disappointing features of the situation.

We quote for mill shipments, New York delivery, as follows: Soft steel bars, 2.24c. to 2.34c.; plates, 2.14c. to 2.24c.; structural shapes, 2.14c. to 2.24c.; bar iron, 2.14c. to 2.24c.

**Cast Iron Pipe.**—Most domestic makers of pressure pipe are well booked for the next two months or more, particularly on the smaller sizes. Prices continue firm and unchanged, except for occasional weakness when competition of the imported product is encountered. Bids are opened today by Lynn, Mass., on 8300 tons of 60-in. pipe. The Warren Foundry & Pipe Co. was the low bidder on the 500 tons of 42-in. pipe for Providence, R. I., bids on which were opened Aug. 17. The soil pipe market continues quiet with a moderate volume of tonnage moving at the high discounts.

We quote pressure pipe per net ton, f.o.b. New York, in carload lots, as follows: 6-in. and larger, \$50.60 to \$51.60; 4-in. and 5-in., \$55.60 to \$56.60; 3-in., \$65.60 to \$66.60, with \$5 additional for Class A and gas pipe. Discounts of both Northern and Southern makers of soil pipe, f.o.b. New York, are as follows: 6-in., 45 to 50 per cent off list; heavy, 55 to 60 per cent off list.

**Old Material.**—Firmness continues a feature in all grades, but the general upward tendency of the market seems to have slackened temporarily. One broker has reduced his offering price for eastern Pennsylvania delivery to \$15.75 per ton on No. 1 heavy melting steel, but the market as a whole is quotable at \$16 to \$16.75 per ton delivered. Heavy breakable cast is strong and quotable at \$13.75 to \$14.25 per ton, New York. Stove plate is unchanged at \$14 per ton, delivered, either on a \$2.02 or \$3.53 freight rate. Rerolling rails show a slight advance, and steel car axles are quotable at 50c. per ton advance.

Buying prices per gross ton New York follow:	
Heavy melting steel, yard	..... \$11.75 to \$12.25
Heavy melting steel, (railroad or equivalent)	..... 13.25 to 13.75
Rails for rolling	..... 14.25 to 14.75
Relaying rails, nominal	..... 23.00 to 24.00
Steel car axles	..... 21.50 to 22.00
Iron car axles	..... 24.00 to 24.50
No. 1 railroad wrought	..... 14.00 to 14.50
Forge fire	..... 10.50 to 11.00
No. 1 yard wrought, long	..... 13.00 to 13.50
Cast borings (steel mill)	..... 9.50 to 10.00
Cast borings (chemical)	..... 13.00 to 14.00
Machine shop turnings	..... 9.25 to 10.00
Mixed borings and turnings	..... 9.00 to 9.50
Iron and steel pipe (1 in. diam. not under 2 ft. long)	..... 12.00 to 12.50
Stove plate	..... 10.50 to 12.00
Locomotive grate bars	..... 11.00 to 11.50
Malleable cast (railroad)	..... 15.00 to 15.50
Cast iron car wheels	..... 13.50 to 14.00
No. 1 heavy breakable cast	..... 13.75 to 14.25

Prices which dealers in New York and Brooklyn are quoting to local foundries per gross ton follow:	
No. 1 machinery cast	..... \$17.50 to \$18.00
No. 1 heavy cast (columns, building material, etc.), cupola size	..... 16.00 to 16.50
No. 2 cast (radiators, cast boilers, etc.)	..... 15.00 to 15.50

The Interlake Steamship Co., Cleveland, which is affiliated with Pickands, Mather & Co., has placed a contract with the American Shipbuilding Co. for two 600-ft. freight boats for 1926 delivery. They will be built at Lorain, Ohio. The Interlake company operates the second largest fleet on the lakes and when the new freighters are completed the company will have 51 boats.

Mining and industrial electric locomotives shipped in the quarter ended June 30 numbered 139, valued at \$663,335, making a total for the six months of 297 units, valued at \$1,357,059. The figures are well below the corresponding totals of last year, which showed, respectively, 155 units at \$810,903 and 340 units at \$1,709,429.

## Birmingham

### Steady Operation Assured—Increasing Schedule on Pipe Fittings

BIRMINGHAM, Aug. 17.—Melt in the home territory and shipment of pig iron in small lots have been aggregating somewhat better than production recently in this territory and there is hope now that this will continue for some time. That some of the larger melters of iron here have business which will require steady operation of plants is demonstrated by the fact that a local consumer the past week, seeking quick delivery on five cars of cast pressure pipe, found it not easy to have orders sidetracked for this business. Soil pipe and fittings producers recently noted an impetus in their trade and increased production. This branch of the industry requires more iron now than for some time. The Woodward Iron Co. is blowing in this week its furnace which has just undergone improvements, making three Woodward furnaces on foundry iron and one on basic. Basic iron production in Alabama has been in excess of foundry for the past few weeks, the larger furnaces being on basic. Quotations of iron remain steady, \$18.50 being asked for No. 2 foundry right along. Fourth-quarter sales are beginning to aggregate somewhat better and the advance of 50c. a ton is being sounded out. The quotation level appears firm, consumers believing that the minimum has been reached. Shipment of iron in car lots into the Middle West from this district continues. Furnace interests apparently have sold well through the third quarter and start has been made on the fourth.

We quote per gross ton, f.o.b. Birmingham district furnaces, as follows:

No. 2 foundry, 1.75 to 2.25 sil.	\$18.00 to \$19.00
No. 1 foundry, 2.25 to 2.75 sil.	19.00 to 19.50
Basic	18.50 to 19.50
Charcoal, warm blast	30.00 to 32.00

**Finished Steel.**—Finishing mills are doing a little better and as a consequence steel consumption is greater. Fabricating plants of all kinds, structural, plate and other shapes, tanks and other products, are all active and are shipping in volume. Improved conditions in steel are looked for in this district, inquiries heading that way. All plants of the Steel Corporation are practically at capacity and the Gulf States Steel Co. has four out of six open-hearth furnaces in operation, with finishing mills almost to the limit. Soft steel bars are quoted, Birmingham, 2.15c. to 2.25c.

**Cast Iron Pipe.**—All plants on cast iron pressure pipe have large unfilled tonnage to work off and production is being maintained, with shipments equal to output. New lettings are announced weekly with several good sized specifications still in sight. The United States Cast Iron Pipe & Foundry Co. plants here will begin shipment at once on the 2200-ton order for 30-in. pipe to be used at Cristobal, Panama. Local demand for five cars of pipe for immediate use was not accepted; time of delivery was not altogether agreeable. Quotations remain firm at \$40 to \$42, 6-in. and over pipe. Ground has been broken for the new centrifugal pipe plant of the American Cast Iron Pipe Co., which will have a daily capacity of 500 tons.

**Coke.**—Independent coke producers are maintaining production and find little difficulty in marketing their product. Quotations are rather weak, \$4.50 to \$5 being asked for foundry coke. Shipments are equal to make. Contracts in hand call for considerable tonnage yet and remainder of year will be active in make and shipment.

**Old Material.**—Steady movement of scrap iron and steel is noted but the market is not so reassuring as it has been. The Tennessee Coal, Iron & Railroad Co. bought considerable heavy melting steel, distributing the tonnage. This indicates steady operation of open-hearth furnaces and blast furnaces. Dealers are still confident the movement of old material will be steady through the remainder of the year. Yards are being

supplied and preparation of old material is being given attention.

We quote per gross ton, f.o.b. Birmingham district yards, as follows:

Cast iron borings, chemical	\$15.00 to \$16.00
Heavy melting steel	13.00 to 14.00
Railroad wrought	12.00 to 13.00
Steel axles	16.00 to 17.00
Iron axles	16.00 to 17.00
Steel rails	13.00 to 14.00
No. 1 cast	16.00 to 16.50
Tramcar wheels	16.50 to 17.00
Car wheels	15.00 to 16.00
Stove plate	13.00 to 13.50
Machine shop turnings	1.00 to 8.00
Cast iron borings	7.00 to 8.00
Rails for rolling	16.50 to 17.00

## San Francisco

### Present Prices Likely to Be Maintained—Structural Material Active

SAN FRANCISCO, Aug. 15 (*By Air Mail*).—Interest in structural material was again the outstanding feature of the week. Prices generally remain unchanged. Developments again lent color to the belief that Eastern mills will endeavor to maintain prevailing quotations, particularly in plates and shapes. In reinforcing bars, however, 2.35c. c.i.f. Coast ports is understood to be obtainable for fair size tonnages. Nothing further has been developed in Belgian shapes since the low quotation reported a week ago, and no large business is known to have been booked. Eastern mills continue to quote \$3.15 base for wire nails, and rumors persist that orders are being taken below that figure. A new inquiry is in the market for about 500 tons of 70-lb. rails.

**Pig Iron.**—A fresh inquiry is in the market for 500 tons of foundry iron, silicon 2.75 to 3.25 per cent. This is the only new development of consequence. A local user placed about 500 tons of foundry iron during the week with a Western producer. Business in foreign irons is confined principally to small lots. Prices are not strong, but there has been, recently, no business large enough to influence the market.

*Utah basic	\$27.00 to \$28.00
*Utah foundry, sil. 1.75 to 2.25	27.00 to 28.00
**English foundry	27.00 to 28.00
**Belgian foundry	26.00
**Dutch foundry	25.00
**Indian foundry	26.50
**German foundry	26.50
*Birmingham, Ala., foundry, sil. 2.75 to 3.25	29.00 to 30.00

\*Delivered San Francisco.

\*\*Duty paid, f.o.b. cars San Francisco.

**Shapes.**—Contracts reported closed during the week totaled 9205 tons. No fresh inquiries of size have come up. Prices remain 2.35c. to 2.40c. c.i.f. Coast ports. The largest award of the week was 6000 tons for galvanized steel transmission towers for the Southern California Edison Co., Los Angeles, which was split, 4000 tons going to the Newport News Shipbuilding Co. and 2000 tons to the Pacific Coast Steel Co. Dyer Brothers took 1000 tons for a Bank of Italy building in San Jose, and 800 tons for a Bank of Italy building in Stockton.

**Plates.**—Fresh inquiries call for about 1300 tons, and awards during the week totaled 1500 tons. Prices are 2.30c. to 2.35c. c.i.f. Coast ports. While some business has been placed recently at 2.30c., this figure does not apply to small tonnages. The Southern Pacific Equipment Co. has placed the final 800 tons of its 3000 tons inquiry for plates and shapes. The General Petroleum Corporation has placed 500 tons with an unnamed mill. The 300 tons called for by the Associated Oil Co. for an 80,000-bbl. tank has been abandoned, but the Pacific Oil Co., a subsidiary firm, has placed 200 tons for a 55,000-bbl. tank with the Lacy Mfg. Co. Opening of bids by the Eugene Water Board, Eugene, Ore., for the McKenzie River water supply system, which calls for 1500 tons, has been postponed, and a new date for the opening of bids will be announced shortly. The Union Oil Co. inquiry for 1800 to 3600 tons has been indefinitely postponed. Bids are being

received for about 1000 tons for a penstock job for the South San Joaquin Irrigation District, and bids were opened Aug. 13 for 300 tons by a San Francisco user.

**Bars.**—About 1400 tons of reinforcing bars was placed during the week for jobs requiring 100 tons or more. Smaller lettings are estimated to have totaled between 500 to 800 tons. Demand for soft steel bars is confined to small tonnages. Local mills quote 2.45c., 100-ton lots, f.o.b. San Francisco, and 2.50c. per 100-lb. Reinforcing bars out of stock are: 3.25c., base, 250 tons; 3.35c., base, carload; 3.80c., base, l.c.l. Among the larger reinforcing bar lettings of the week were the following:

Army & Navy Y. M. C. A., Embarcadero, San Francisco, Cal., 175 tons, to an unnamed San Francisco jobber.

Mercantile Trust Co., Berkeley, Cal., 175 tons, to an unnamed San Francisco jobber.

Garage, Jessie near Fourth Street, San Francisco, Cal., 500 tons, to an unnamed San Francisco jobber.

Tregoning Apartments, Seattle, Wash., 150 tons, to Pacific Coast Steel Co.

Government Hospital, Canacao, P. I., 400 tons, to unknown interest through J. E. Grant, Manila, P. I., general contractor.

**Steel Pipe.**—The San Jose Water Co., San Jose, Cal., is in the market for 250 to 300 tons of dipped, plain-end line pipe, 2000-ft. of 4-in. and 25,000-ft. of 6-in. Bids open Aug. 17.

**Sheets.**—Most buyers covered their requirements before the stiffening of prices, and as a result little buying of consequence has been done since Eastern mills named 4.30c., Pittsburgh, in galvanized sheets. It is still possible to shade this figure with a fair size order, but as no large business is in sight 4.30c. remains, nominally, the present market. Although there have been rumors of better than 2.30c., Pittsburgh, in blue annealed sheets, there have been few recent orders placed below that figure. Black sheets are quoted 3.15c., Pittsburgh.

**Warehouse Business.**—August sales, so far, have been on about a par with the business placed during the first half of July. Current buying is limited to moderate quantities. Prices are unchanged.

Merchant bars, \$3.30 base, per 100 lb.; merchant bars,  $\frac{3}{4}$  in. and under, rounds, squares and flats, \$3.80 base, per 100 lb.; soft steel bands, \$4.15 base, per 100 lb.; angles,  $\frac{1}{4}$  in. and larger  $\times \frac{1}{2}$  in. to  $2\frac{1}{2}$  in., inc., \$3.30 base, per 100 lb.; channels and tees,  $\frac{3}{4}$  in. to  $2\frac{1}{4}$  in., inc., \$3.90 base, per 100 lb.; angles, beams and channels, 3 in. and larger, \$3.30 base, per 100 lb.; tees, 3 in. and larger, \$3.30 base, per 100 lb.; universal mill plates,  $\frac{3}{4}$  in. and heavier, stock lengths, \$3.30 base, per 100 lb.; spring steel,  $\frac{1}{4}$  in. and thicker, \$6.30 base, per 100 lb.; wire nails, \$3.50 base, per 100 lb.; cement coated nails, \$3 base, per 100 lb.; No. 10 blue annealed sheets, \$3.70 per 100 lb.; No. 28 galvanized sheets, \$5.75 per 100 lb.; No. 28 black sheets, \$4.65 per 100 lb.

**Cast Iron Pipe.**—A number of jobs are pending, and bids are being received for others. Prices are unchanged \$52 to \$53 base, water shipment, San Francisco district. Bids have been rejected for the 501 tons called for by Beverly Hills, Cal., and new bids will be called Aug. 24. The 210 tons required by Gilbert, Ariz., has been postponed indefinitely. Bids have closed for 128 tons for Modesto, Cal., but no award will be announced until Aug. 26. It is understood that the low bid was made by French pipe interests.

**Coke.**—Interest is quiet, and sales are confined to small lots. A local importer is expecting about 2000 tons of English coke before the end of the month. Prices are unchanged.

English beehive, \$16 at incoming dock, and English by-product, \$14; German by-product, \$14 to \$14.50; Birmingham, Ala., by-product, \$19 delivered; Wise County, Va., beehive, \$22 delivered.

**Old Material.**—No new developments have been noted during the past fortnight. Interest is slack, prices are weak, and the supply of scrap in consumer's yards is apparently adequate for all current requirements. Better buying is expected to start shortly after the middle of September.

Prices for scrap delivered to consumers' yards are as follows:

*Per Gross Ton*

No. 1 heavy melting steel.....	\$10.50 to \$11.00
Scrap rails, miscellaneous.....	10.50 to 11.00
Rolled steel wheels.....	10.50 to 11.00
Couplers and knuckles.....	10.50 to 11.00
Mixed borings and turnings.....	6.00 to 6.50
Country mixed scrap.....	8.00 to 8.50
No. 1 cast scrap.....	22.00 to 24.00

## Boston

### Pig Iron Buying and Inquiry Drop to Small Proportions

BOSTON, Aug. 18.—The past week witnessed a decided falling off in pig iron sales in this territory, and a corresponding slump in prospective business. The largest open inquiry in the market today is one for 300 tons for the General Electric Co.'s West Lynn and Everett, Mass., foundries. With the falling off in business, most of the Buffalo district furnaces are endeavoring to establish a \$19 furnace base with regular differentials. Melters claim, however, \$18.50 base with differentials can be done, even on small tonnages. No. 2X Buffalo iron having been sold within the past ten days at \$18 furnace, prices now quoted in some instances represent an apparent appreciation of \$1 a ton on that particular grade. The Buffalo iron market is not, however, so firm as appears on the surface owing to the abundance of foreign iron at more or less uncertain prices. Previous claims by sellers that Dutch iron was sold at prices \$3.50 to \$4 a ton under the delivered price of Buffalo are erroneous. The iron in question was shipped from a Dutch port but is of German origin. This iron today, any silicon, is available at \$20.75 on dock Boston, duty paid, but apparently may be obtained on an f.o.b. Providence, R. I., dock basis for less. Dutch iron, heretofore sold at \$21.50 f.o.b. Boston dock, duty paid, is now \$22. Indian iron is available on about the same basis.

We quote delivered prices on the basis of the latest sales as follows, having added \$3.65 freight from eastern Pennsylvania, \$4.91 from Buffalo, \$5.92 from Virginia, and \$9.60 from Alabama:

East, Penn., sil. 1.75 to 2.25.....	\$23.65 to \$24.15
East, Penn., sil. 2.25 to 2.75.....	24.15 to 24.65
Buffalo, sil. 1.75 to 2.75.....	23.41 to 23.91
Buffalo, sil. 2.25 to 2.75.....	23.91 to 24.41
Virginia, sil. 1.75 to 2.25.....	28.42 to 29.92
Virginia, sil. 2.25 to 2.75.....	28.92 to 30.42
Alabama, sil. 1.75 to 2.25.....	28.10 to 28.60
Alabama, sil. 2.25 to 2.75.....	28.60 to 29.11

**Cast Iron Pipe.**—Lynn, Mass., tonight will close bids on approximately 9000 tons of 60-in. pipe for a proposed sewer system. Providence, R. I., yesterday closed bids on 500 tons 42-in. pipe and probably will make an award this week. Nahant, Mass., has postponed the purchase of 300 tons of pipe, on which bids were recently submitted, until 1926. The United States Cast Iron Pipe & Foundry Co. was awarded about 500 tons of 12-in. pipe by East Bridgewater, Mass. The company's bid was about \$3.50 a ton over that submitted by French pipe interests. One of the large Massachusetts gas companies is reported to have placed 3000 tons of gas pipe with a New Jersey foundry for winter delivery. Prices on heavy pipe, heretofore more or less unsettled, appear somewhat firmer, while those on small sizes are strongly maintained. Prices quoted locally on domestic cast iron pipe follow: 4-in., \$60.10 a ton delivered common Boston freight rate points; 6-in. to 16-in., \$56.10; 20-in. and larger, \$55.10. The usual \$5 differential and Class A and gas pipe is demanded.

**Coke.**—Both the New England Coal & Coke Co. and the Providence Gas Co. have announced an advance of 50c. a ton in by-product foundry coke to \$12 a ton delivered where the freight rate does not exceed \$3.10. The \$11.50 a ton delivered rate had been in effect for something over four months. The marking up of prices was presumably in anticipation of labor troubles at the anthracite mines and of a greater demand for bituminous coals in that event. Higher prices apparently have had no influence on current specifications against last half coke contracts, which continue to run about 50 per cent ahead of those for July.

**Old Material.**—A slight improvement in the movement of old material out of New England to Pennsylvania is noted. On the other hand, buying for New England consumption has fallen off. Heavy melting steel is by far the most active material in the market. For eastern Pennsylvania consumption, \$11.50 to \$12 on cars shipping point is being paid, while for the Pittsburgh district the market is \$12.50 to \$13. Bridge-

port, Conn., is still buying on a basis of \$14 delivered, which averages about \$11.50 on cars shipping point or possibly a little less. The American Steel & Wire Co., Worcester, Mass., is not much of a market factor today. General prices on other materials are about the same as a week ago, but instances are noted where buyers are paying 10c. a ton above the market to secure prompt shipment, especially on machine shop turnings and blast furnace borings and turnings. Forged scrap and forged flashings in a few instances have brought 50c. more than previously quoted. Chemical borings, for which there is no immediate demand, are offered more freely than they have been before in months.

The following prices are for gross ton lots delivered consuming points:

Textile cast	\$20.00 to \$21.00
No. 1 machinery cast	19.00 to 19.50
No. 2 machinery cast	15.50 to 16.50
Stove plates	13.50 to 14.00
Railroad malleable	19.00 to 19.50

The following prices are offered per gross ton lots, f.o.b. Boston rate shipping points:

No. 1 heavy melting steel	\$11.50 to \$13.00
No. 1 railroad wrought	13.00 to 13.50
No. 1 yard wrought	12.00 to 12.50
Wrought pipe (1 in. in diam., over 2 ft. long)	11.50 to 12.00
Machine shop turnings	8.50 to 9.00
Cast iron borings, chemical	11.00 to 11.50
Cast iron borings, rolling mill	8.50 to 8.75
Blast furnace borings and turnings	7.50 to 8.00
Forged scrap	10.00 to 11.00
Bundled skeleton, long	9.50 to 10.00
Forged flashings	10.00 to 10.50
Bundled cotton ties, long	8.50 to 9.00
Bundled cotton ties, short	10.00 to 10.50
Shaftings	19.00 to 19.50
Street car axles	18.00 to 18.50
Rails for rerolling	12.50 to 13.00
Scrap rails	11.50 to 13.00

## St. Louis

### Lull in Pig Iron Buying—Scrap Higher in Dealers' Market

ST. LOUIS, Aug. 18.—Purchasing of pig iron has contracted almost to the vanishing point, total sales being less than 1000 tons. Generally supplies at plants are sufficient for immediate requirements. The melt is holding up well, however, and there is considerable anxiety on the part of melters to get in their contract iron, with a number of requests to anticipate late August quotas. The largest sale reported was 400 tons to an Iowa furnace manufacturer for prompt shipment. The only inquiry of interest was for 200 to 300 tons from a northern Illinois specialty maker for delivery during the first quarter of 1926. This is the first demand for next year thus far made known locally. Prices hold firm, with Northern iron at \$20 to \$20.50, Chicago, and Southern at \$18.50 to \$19, Birmingham. The leading local producer continues to quote \$21.50 to \$22, f.o.b. Granite City.

We quote delivered consumers' yards, St. Louis, as follows, having added to furnace prices \$2.16 freight from Chicago, \$5.17 from Birmingham, all rail, and 81c. average switching charge from Granite City.

Northern fdy., sil. 1.75 to 2.25	\$22.66 to \$23.16
Northern malleable, sil. 1.75 to 2.25	22.66 to 23.16
Basic	22.66 to 23.16
Alabama fdy., sil. 1.75 to 2.25 (rail)	22.67 to 24.17
Tennessee fdy., sil. 1.75 to 2.25	22.67
Granite City iron, sil. 1.75 to 2.25	21.31 to 21.81

**Finished Iron and Steel.**—While totaling a good volume, sales of iron and steel products are confined principally to small lots for prompt shipment. Warehousemen report an excellent movement of standard structural shapes and bars, and the fabricators are getting a fair tonnage of small orders, but nothing of size has been booked. The demand from the oil fields for all varieties of goods has developed further improvement, with the northern Louisiana and Arkansas fields particularly heavy buyers. Hoops and cotton ties are moving actively to the South, and generally through the agricultural sections there is a good demand for wire fencing. The railroads are buying sparingly, but the general manufacturing demand is

good. Prices were steady, but with a slightly firmer trend on certain items.

For stock out of warehouse we quote: Soft steel bars, 3.15c. per lb.; iron bars, 3.15c.; structural shapes, 3.25c.; tank plates, 3.25c.; No. 10 blue annealed sheets, 3.60c.; No. 28 black sheets, cold rolled, one pass, 4.50c.; galvanized sheets, No. 28, 5.50c.; black corrugated sheets, 4.65c.; galvanized, 5.65c.; cold-rolled rounds, shafting and screw stock, 3.70c.; structural rivets, 3.65c.; boiler rivets, 3.85c.; tank rivets,  $\frac{1}{8}$  in. diameter and smaller, 70 per cent off list; machine bolts, 55 per cent; carriage bolts, 50 per cent; lag screws, 60 per cent; hot pressed nuts, squares, \$3.50; hexagons, blank or tapped, \$4 off list.

**Coke.**—Foundry coke continues to sell actively, reflecting the gradually increasing melt at foundries. Virtually all the metallurgical business is being handled by the local by-product manufacturers, receipts from Eastern and Southern ovens being the smallest ever recorded at this particular time of year. Some improvement in domestic coke has come with growing apprehensions of a strike in the anthracite fields. This stimulant, however, is purely sentimental, as not enough anthracite is used in this section to create a ripple in supplies generally were it eliminated entirely.

**Old Material.**—Great strength features the market, based chiefly on buying activities of the dealers and higher prices at Chicago and further East. Advances of 50c. to \$1 per ton were general through the list, despite the fact that the industries are buying in a limited way, and only what they are obliged to have for immediate use. Cast grades, malleable and wrought scrap and some steel items are particularly strong. Steel rails are very scarce and, with quite a short interest, prices are being forced upward. The few orders being placed for material specify prompt delivery, indicating a shortage among certain users. Railroads are getting top prices for everything they market. The following lists were before the trade: Rock Island, 4500 tons; Denver & Rio Grande, 2000 tons; Chicago, Milwaukee & St. Paul, 1600 tons; Kansas City Southern, 882 tons, and Texas & Pacific, 600 tons.

We quote dealers' prices f.o.b. consumers' works, St. Louis industrial district and dealers' yards, as follows:

	Per Gross Ton
Iron rails	\$15.00 to \$15.50
Rails for rolling	18.00 to 18.50
Steel rails less than 3 ft.	17.50 to 18.00
Relaying rails, 60 lb. and under	24.00 to 25.00
Relaying rails, 70 lb. and over	31.00 to 33.00
Cast iron car wheels	18.50 to 19.00
Heavy melting steel	15.00 to 15.50
Heavy shoveling steel	15.00 to 15.50
Frogs, switches and guards cut apart	17.00 to 17.50
Railroad springs	18.00 to 18.50
Heavy axles and tire turnings	12.00 to 12.50
No. 1 locomotive tires	17.00 to 17.50
	Per Net Ton
Steel angle bars	15.50 to 16.00
Steel car axles	18.00 to 18.50
Iron car axles	25.00 to 25.50
Wrought iron bars and transoms	19.00 to 19.50
No. 1 railroad wrought	13.50 to 14.00
No. 2 railroad wrought	13.50 to 14.00
Cast iron borings	10.75 to 12.25
No. 1 busheling	11.50 to 12.00
No. 1 railroad cast	15.50 to 16.00
No. 1 machinery cast	17.00 to 17.50
Railroad malleable	14.50 to 15.00
Machine shop turnings	7.75 to 8.25
Champion bundled sheets	9.25 to 9.75

### Further Scrap Advances in Detroit

DETROIT, Aug. 18.—With dealers evidently trying to cover on tonnages on which they are short, some new high prices have been registered in the market on old material during the past week. Blast furnace material shows an advance of 50c. per ton, and with quite a number of mills needing to buy for the rest of the year, the general feeling is that present prices will hold for some time to come.

The following prices are quoted on a gross ton basis f.o.b. producers' yards, excepting stove plate, No. 1 machinery cast and automobile cast, which are quoted on a net ton basis:

Heavy melting and shoveling steel	\$14.50 to \$15.00
Borings and short turnings	11.75 to 12.25
Long turnings	11.75 to 12.25
No. 1 machinery cast	15.00 to 16.00
Automobile cast	21.00 to 22.00
Hydraulic compressed	13.75 to 14.25
Stove plate	12.50 to 13.00
No. 1 busheling	12.75 to 13.25
Sheet clippings	9.00 to 10.00
Flashings	12.00 to 12.50

## Cincinnati

### Buying of Last Quarter Pig Iron—Broadening Interest in Steel

CINCINNATI, Aug. 18.—Decision of numerous buyers to cover their requirements for the rest of the year resulted in augmented pig iron sales during the past week. Bookings in that period exceeded 12,000 tons. Northern foundry iron in the Ironton district is firm at \$19.50, furnace, with quotations of \$20 being made on fourth quarter business in certain instances. It is believed, however, that attractive tonnages for shipment over the remainder of the year can be readily procured at \$19.50. Persistence of Lake furnaces in offering iron in this territory at prices which are lower than those of southern Ohio interests has proved to be a disturbing factor. Two important sales of Northern iron, one of 2000 tons to a Hamilton, Ohio, melter and the other of a like tonnage to a central Indiana consumer have been closed by a Toledo, Ohio, furnace. Sales of foundry iron made by local dealers have included 1000 tons to a southeastern Ohio melter, 800 tons to a Louisville, Ky., manufacturer; 275 tons to a southern Ohio consumer and 300 tons to central Indiana. An appreciable tonnage of off-sulphur iron has been taken by a southern Ohio melter. Malleable iron orders included 500 tons to a Springfield, Ohio, manufacturer. Scattered sales of charcoal iron have been reported. Tennessee iron is still obtainable at \$17.50, Birmingham, but orders have been confined to small lots. Movement of Alabama iron has been restricted to single carloads. The price is \$18.50, Birmingham, for immediate shipment. Alabama furnaces are disposed to ask \$19.50 to \$20 for fourth quarter business. Jackson County silvery iron sales have been unimportant. There is a dearth of sizable inquiries. The largest one is for 1000 tons of Southern iron for delivery in southern Illinois. A Hamilton, Ohio, melter is in the market for 500 tons of Southern iron, while a central Indiana consumer is inquiring for 300 tons of Northern foundry. The Belfont stack of the Belfont Steel & Wire Co., Ironton, Ohio, was blown out on Aug. 15 for relining. This furnace expects to resume operations within four weeks. A Detroit automobile manufacturer is in the market for 100 tons of ferromanganese.

Based on freight rates of \$4.05 from Birmingham and \$2.27 from Ironton we quote f.o.b. Cincinnati:

Alabama, fdv., sil. 1.75 to 2.25 (base) .....	\$22.55 to \$23.05
Alabama fdv., sil. 2.25 to 2.75..	23.05 to 23.55
Tennessee fdv., sil. 1.75 to 2.25..	21.55
Southern Ohio silvery, 8 per cent	28.27
Southern Ohio fdv., sil. 1.75 to 2.25 .....	21.77
Southern Ohio, malleable .....	21.27 to 21.77

**Bars, Plates and Shapes.**—Activities have been accelerated due to the presence of several important buyers in the market. Sellers believe that an upturn in business has come and that the interest displayed by consumers presages a buying movement of considerable proportions in the early fall. Increased orders are attributed in some measure to the fact that purchasing agents are convinced that prices are as low as they are likely to go. In addition, many consumers have a meager stock on hand and are forced to replenish their supply. Reports from rural districts in Ohio and Indiana confirm previous statements that crops are heavy and that farmers will have money to spend on improvements and replacements. Sales of bars have reached a sizable figure. A large seller states that orders in the past week aggregated a greater tonnage than in any other week since March. Several attractive sales have been made at 2c., Pittsburgh. Sellers are not disposed to dip below this quotation. Increased demand has been evidenced for shapes, which are selling at 2c., Pittsburgh. Moderate orders for plates have been recorded at 1.85c. to 1.90c., Pittsburgh. Fabricators are bidding on considerable business, most of which calls for less than 75 tons. Bids have gone in on the Sterchi Building, Knoxville, Tenn., which will require 800 tons. Letting of the general contract for the new boiler shops of the Chesapeake & Ohio Rail-

road at Huntington, W. Va., requiring nearly 1000 tons, is expected within a few days.

**Reinforcing Bars.**—The Pollak Steel Co. will furnish 680 tons for the Lazarus Building, Columbus. The George A. Fuller Co., which has been awarded the general contract for the new home of the Cincinnati *Enquirer*, is expected to purchase 200 tons within the next few weeks. Scarcity of new projects has slowed down operations locally. New billet bars are showing strength at 2c. to 2.10c., mill, while rail steel bars are firm at 1.90c., mill. Small lettings, specifying from 25 to 75 tons, are less numerous than they were several weeks ago.

**Wire Goods.**—Disposition of independent mills in the Ironton district to book business below the schedule set by Eastern producers is still the most depressing factor. Although price concessions are not quite so heavy as they were in July, they continue to a sufficient extent to encourage the consumer to hold out for the lowest possible quotations in many instances. Common wire nails can be secured from independent operators for 2.74c., delivered in Cincinnati. Eastern producers are refusing to go below 2.94c., delivered here, and, consequently, a considerable portion of the orders go to the Ironton district mills. Competition on plain wire is not so strenuous, although here again quotations below 2.79c., delivered in Cincinnati, the price asked by Pittsburgh manufacturers, have taken much of the business. Purchases by jobbers are spasmodic and cover only their immediate requirements. Large consumers are satisfied to buy only a short time ahead and are not attempting to carry much stock, preferring to rely upon quick deliveries if necessary.

**Sheets.**—The local market has been given an impetus by the increased purchases by consumers. Several mills declare that they have more tonnage on their books at present than they have had in many months. Jobbers appear contented to carry a small, but well diversified stock. They are, however, beginning to buy more freely. Stove companies, which have had their warehouses filled with sheets, are moving some of this material and are considering the question of ordering replacements. Buyers are finding that they cannot obtain delivery from mills in less than five to six weeks. Many consumers have filed specifications covering their requirements through October. The prevailing tendency, however, is to confine purchases to immediate needs. Buyers are not yet convinced that it is wise for them to order in anticipation of future business. Much interest is being centered upon the attempt of sellers to increase the price of galvanized sheets from 4.20c. to 4.30c., Pittsburgh. Practically without exception, mills are quoting the latter figure, but sizable tonnages are still being sold at 4.20c. In fact, most consumers are covered through October at the old price. Prospects are excellent for a good roofing business this fall and sellers are optimistic regarding the volume of orders on galvanized sheets in the next month. Black sheets are firm at 3.15c., Pittsburgh, while blue annealed sheets are quoted at 2.30c., Pittsburgh. Auto sheets are bringing 4.25c., Pittsburgh, although demand is light.

**Warehouse Business.**—Most jobbers state that sales have receded somewhat, but the loss as compared with July orders is not serious. Several jobbers are encouraged because their business has shown an increase over last month, whereas normally there is a slight falling off. Activity in structural steel and in reinforcing bars offsets the light buying in pipe and tubular goods. Little demand is evinced for nails. Cold rolled steel is moving well for use in the automotive field. Prices are steady, with no changes recorded.

Cincinnati jobbers quote: Iron and steel bars, 3.30c.; reinforcing bars, 3.30c.; hoops, 4c. to 4.25c.; bands, 3.95c.; shapes, 3.40c.; plates, 3.40c.; cold-rolled rounds and hexagons, 3.85c.; squares, 4.35c.; open-hearth spring steel, 4.75c. to 5.75c.; No. 10 blue annealed sheets, 3.60c.; No. 28 black sheets, 4.10c.; No. 28 galvanized sheets, 5.25c.; No. 9 annealed wire, \$3 per 100 lb.; common wire nails, \$2.95 per keg base; cement coated nails, \$2.40 per keg; chain, \$7.55 per 100 lb. base; large round head rivets, \$8.75 base; small rivets, 65 per cent off list. Boiler tubes, prices net per 100 ft. lap welded steel tubes, 2-in., \$18; 4-in., \$38; seamless, 2-in., \$19; 4-in., \$39.

**Tin Plate.**—Can factories in Ohio and Indiana are enjoying a profitable season on tomatoes, corn and fruit. Can manufacturers have been kept busy supplying the demand for cans. The majority of them have filed their tin plate specifications covering their requirements through October. The prevailing rate of \$5.50 per base box, Pittsburgh, continues.

**Coke.**—Shipments of domestic coke are showing a substantial increase. Foundry grades are being delivered in about the same volume as last month. Sales of coke by local dealers in the past week totaled approximately 7000 tons. The shutdown of two blast furnaces in the Ironton district has restricted the production of furnace coke in that territory, although the Portsmouth By-Product Coke Co. is running at capacity. Prices are stiffening somewhat, although there have been no actual changes in quotations.

**Old Material.**—Confidence is still professed by dealers, despite the fact that mills have not increased their operations and are not likely to purchase much scrap within the next few weeks. Heavy melting steel is firm at \$15 to \$15.50 and other items are displaying strength. The Louisville & Nashville Railroad has a list aggregating about 10,000 tons, which closes today. Considerable material offered by carriers last week was absorbed by dealers in this territory.

We quote dealers' buying prices, f.o.b. cars, Cincinnati:

Per Gross Ton	
Heavy melting steel	\$15.00 to \$15.50
Scrap rails for melting	14.50 to 15.00
Short rails	18.50 to 19.00
Relaying rails	28.00 to 28.50
Rails for rolling	15.50 to 16.00
Old car wheels	14.00 to 14.50
No. 1 locomotive tires	17.00 to 17.50
Railroad malleable	16.00 to 16.50
Agricultural malleable	15.50 to 16.00
Loose sheet clippings	10.50 to 11.00
Champion bundled sheets	12.00 to 12.50

Per Net Ton	
Cast iron borings	9.00 to 9.50
Machine shop turnings	8.00 to 8.50
No. 1 machine cast	19.00 to 19.50
No. 1 railroad cast	15.50 to 16.00
Iron axles	23.00 to 23.50
No. 1 railroad wrought	12.00 to 12.50
Pipes and flues	9.00 to 10.00
No. 1 busheling	11.00 to 11.50
Mixed busheling	9.50 to 10.00
Burnt cast	10.00 to 10.50
Stove plate	11.00 to 11.50
Brake shoes	11.00 to 11.50

## Buffalo

### Pig Iron Business with New England— Scrap Market Quiet

**BUFFALO,** Aug. 18.—Inquiry for the week ranged between 9000 and 10,000 tons and was mostly from New England. One furnace interest here reports that its total sales from all points for the week was close to 7000 to 8000 tons. One of the sales was for 1500 tons of foundry and one or two others were 1000 or better. One current inquiry is a combination for 2000 to 3000 tons of basic and foundry. It had not been closed at present writing. Price remains the same as last week with the base firm at \$18.50 to \$19. One interest reports obtaining differentials of 50c. on the higher silicones after quoting \$19 base. The \$18.25 base seems definitely to have disappeared. The Bethlehem Steel Co. has banked one more furnace, making three in operation. Another interest is preparing to light a second furnace.

We quote prices f.o.b. gross ton, Buffalo, as follows:

No. 2 plain, sil. 1.75 to 2.25...	\$18.50 to \$19.00
No. 2X foundry, sil. 2.25 to 2.75...	18.50 to 19.00
No. 1 foundry, sil. 2.75 to 3.25...	19.00 to 19.50
Malleable, sil. up to 2.25....	18.50
Basic	18.50
Lake Superior charcoal.....	29.28

**Finished Iron and Steel.**—The market for bars is holding at 2.265c. delivered Buffalo and shapes at 2.165c. delivered Buffalo. Sheets (galvanized) are firm at 4.565c., Buffalo, with black sheets being quoted at 3.415c. and 3.465c., Buffalo. Inquiry for black sheets is light. Pipe specifications are holding up well and

there has been some business in bolts at 50 and 10 and 10 off, with the probability that this price may have been shaded on desirable business. Bids are up for the 200,000 ft. of steel mesh for the new East Buffalo high school. The Atcheson Graphite Co., Niagara Falls, will build a new factory, for which 100 tons of reinforcing bars have been placed. Roadwork continues coming in to mesh makers. The wire market is not quite so active and Wickwire-Spencer has reduced operations to two of its four open-hearth furnaces.

Warehouse prices are being quoted as follows:

Steel bars, 3.25c.; steel shapes, 3.35c.; steel plates, 3.35c.; No. 10 blue annealed sheets, 3.80c.; No. 28 black sheets, 4.75c.; No. 28 galvanized, 5.45c.; cold rolled shapes, 4.40c.; cold rolled rounds, 3.95c.; wire nails, 4c.; black wire, 4.05c.
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**Old Material.**—Local buying is still scant, but the activity of outside markets is bound to reflect itself here soon, dealers believe. Borings and turnings from the Buffalo district are commanding \$15, Cleveland, with dealers making the offers. As high as \$15.50 is offered at Pittsburgh and the Valley points. A few small sales of short steel rails have been made at \$20. Pittsburgh is paying \$19.50 for heavy melting steel and well established reports are current that Pittsburgh has paid as high as \$20 for such steel. Little malleable is moving, though some sales have been made at \$19 to \$19.50. On a few old heavy melting steel orders that are out, dealers have been paying as high as \$17.50 for heavy melting steel.

We quote prices f.o.b. gross ton, Buffalo, as follows:

Heavy melting steel	\$17.50 to \$18.00
Low phosphorus	19.00 to 20.00
No. 1 railroad wrought	16.00 to 16.50
Car wheels	16.50 to 17.50
Machine shop turnings	12.50 to 13.00
Cast iron borings	12.50 to 13.00
No. 1 busheling	15.00 to 15.50
Stove plate	15.25
Grate bars	14.25 to 14.75
Hand bundled sheets	14.00 to 14.50
Hydraulic compressed	16.00 to 16.50
No. 1 machinery cast	16.50 to 17.00
Railroad malleable	19.00 to 19.50
No. 1 cast scrap	17.00 to 17.50
Iron axles	26.00 to 27.00
Steel axles	17.00 to 17.50

## Cleveland

### Steel Buying Ahead of July Rate—Pig Iron Firm and Active

**CLEVELAND,** Aug. 18.—New demand for finished steel shows a fair gain over last month. While orders as a rule are not large, they have increased in number and kept to their recent average in size. The improvement this month was rather unexpected, as many did not look for a turn for the better before September. Orders for material from the automobile industry are being released for larger lots than had been looked for this month. Some of the car builders are getting in production on their new models and are planning for good operations during the next few weeks with the expectation of a heavy volume of fall business. Agricultural implement manufacturers are ordering steel freely and, with the improved situation of the farmer, regard the outlook of their business better than for several years. In the building field there is a fair volume of activity. The largest award of the week came from the Goodyear Tire & Rubber Co., Akron, which placed 2000 tons of structural steel for a factory building. A Niagara River bridge at Buffalo will require 8000 tons of structural material, bids for which are to be asked about November. Two Lake boats have been placed by the Interlake Steamship Co., operated by a leading ore interest, and will require 10,000 tons of steel which will be placed with independent mills. The New York Central Railroad is inquiring for 75 locomotives and mills have been asked to furnish quotations for the steel for these. The City of Cleveland has taken bids for a cofferdam in connection with a filtration plant that will require 1100 tons of sheet steel piling. The Oakland, Cal., pipe line will require 4000 tons of rivets if riveted pipe is purchased and

makers have been asked to quote rivet prices. The price situation on steel bars, plates and structural material shows no change. Steel bars are holding at 2c. and there is no evidence of a price lower than 2c. on structural material in this territory. Plates are holding well at 1.90c., although in some cases this is being shaded from \$1 to \$2 a ton.

**Pig Iron.**—The market continues fairly active. Prices are firm and Lake furnaces in some cases have been able to get slightly higher prices for small lots than have prevailed recently, although they have not attempted to make a general advance. One producer during the week sold 11,000 tons and another 15,000 tons in foundry and malleable grades. Sales included several round lots to the automotive industry. Recent inquiries for the first quarter have not resulted in any sales. Most furnaces have refused to quote for that delivery and one did not appear interested in taking business for the first quarter except at an advance of about \$1 a ton above present prices. Prospective purchasers when they found that they could not cover except at an advance dropped negotiations. The Valley price on foundry and malleable iron is unchanged at \$18.50 which is the usual Cleveland price for outside shipment although small lot sales have been made at \$19. For Cleveland delivery the price is unchanged at \$19.50 at furnace. In Michigan \$19 is still the prevailing price. One producer now has active inquiries for 15,000 tons for the last quarter. In steel making iron the American Steel Foundries Co. is inquiring for 3000 to 5000 tons of basic iron for its Alliance, Ohio, plant for the last quarter.

Quotations below, except on basic and low phosphorus iron, are delivered Cleveland, and for local iron include a 50c. switching charge. Ohio silvery and Southern iron prices are based on a \$3.02 freight rate from Jackson and \$6 from Birmingham:

Basic, Valley furnace	\$18.00
N'th'n No. 2 fdy., sil. 1.75 to 2.25	20.00
Southern fdy., sil. 1.75 to 2.25	\$23.51 to 26.01
Malleable	20.00
Ohio silvery, 8 per cent	29.02
Standard low phosphorus, Valley furnace	27.50 to 28.00

**Iron Ore.**—One leading ore firm during the past ten days sold 125,000 tons of ore including a 35,000-ton lot, all for this year's delivery and several small lot sales were made by other companies. The Steel Corporation has changed its shipping schedules by reducing the amount of ore carried by contract vessels from the maximum to the minimum provided in the contracts and if its requirements are not taken care of under this plan it will charter wild tonnage later in the season.

**Fluorspar.**—The market has been fairly active the past week, sales including a 1000-ton lot. The shutting down of mines has resulted in a stiffening of prices and the market is firm at \$16 per ton for gravel fluorspar. Sellers predict an advance and are not taking orders for delivery next year. Producers are making efforts to secure lower freight rates on domestic fluorspar, having asked for a reduction to offset the rate reduction made last May on imported fluorspar.

**Semi-Finished Steel.**—An Ohio mill has purchased 5000 tons of slabs at a price range of \$32 to \$32.50, Youngstown. This is the first test of the slab market for some time and in the absence of sales, mills have been asking \$35. New efforts are being made to secure concessions from the \$35 price on sheet bars.

**Strip Steel.**—The hot rolled strip steel market appears firm at 2.20c. for wide material and 2.40c. for narrow strip. The demand is fair. Makers are holding firmly to 3.75c. for cold rolled strip steel.

**Bolts, Nuts and Rivets.**—The demand for bolts and nuts continues fair although orders from the automotive industry are lighter than a few weeks ago. Prices are firm. Rivets are in light demand, most of the orders being specifications on contracts. A leading local maker is still holding to \$2.60 on large rivets although concessions of \$2 to \$3 a ton are common.

**Sheets.**—Efforts to advance sheet prices have been only partly successful. While the market is firmer, some of the prices that were recently prevailing have not disappeared. On black sheets the market is holding fairly well at 3.15c., but some mills will still go

to 3.10c. for a good sized order or one carrying good extras. Blue annealed sheets still can be bought at 2.25c., although several mills are on a 2.30c. base. While most of the mills are holding to 4.25c. for galvanized sheets, these are still fairly plentiful at 4.20c. The demand for blue annealed sheets shows considerable improvement.

**Warehouse Business.**—Weakness has appeared in warehouse prices in sheets, on which concessions of \$3 or more a ton are reported. Other warehouse prices are firm. Jobbers' business shows an improvement over July.

Jobbers quote steel bars, 3.10c.; plates and structural shapes, 3.20c.; No. 28 black sheets, 3.90c.; No. 28 galvanized sheets, 5.10c.; No. 10 blue annealed sheets, 3.10c.; cold-rolled rounds and hexagons, 3.80c.; flats and squares, 4.30c.; hoops and bands, 3.85c.; No. 9 annealed wire, \$3 per 100 lb.; No. 9 galvanized wire, \$3.45 per 100 lb.; common wire nails, \$3 base per 100 lb.

**Reinforcing Bars.**—There is a fair demand for small lots, but little inquiry for round tonnages. The Patterson Leitch Co. has taken 500 tons for a factory extension for the Fisher Ohio Body Co. Irregularities in warehouse prices on billet steel reinforcing bars have appeared, with reports of jobbers' quotations of 2.10c., Youngstown. Rail steel bars are commonly quoted at 1.80c., but these might be shaded \$1 a ton for round lots.

**Coke.**—The market is firm with a price range of \$4.25 to \$5 for standard Connellsburg foundry coke for prompt shipment. Many producers are not inclined to sell for future delivery because of the possibility of higher prices should there be a strike of the anthracite coal miners. Medium sulphur heating coke is firmer with \$3.15 the common price.

**Old Material.**—There is considerable activity among dealers who are trying to cover on short orders and who find the supply of scrap scarce at present prices. The market is very firm with advances of 25c. a ton on machine shop turnings and mixed borings and turnings and somewhat higher prices on a few other grades. Dealers are offering \$15.25 for machine shop turnings for Canton delivery and \$19 for heavy melting steel for Valley delivery, but little, if any, of the latter grade is available at that price. The asking price for compressed steel for Valley shipment has been advanced to \$17.75. Dealers are offering \$17.50 for heavy melting steel for Cleveland delivery. On borings, turnings and busheling \$15 is the ruling price for delivery to local consumers. Some buying by Youngstown district mills is expected this week.

We quote dealers' prices f.o.b. Cleveland per gross ton:	
Heavy melting steel.....	\$17.00 to \$17.50
Rails for rolling.....	17.00 to 17.50
Rails under 3 ft.....	19.00 to 19.50
Low phosphorus melting.....	18.00 to 18.25
Cast iron borings.....	14.25 to 14.75
Machine shop turnings.....	14.25 to 14.75
Mixed borings and short turnings	14.25 to 14.75
Compressed sheet steel.....	15.75 to 16.00
Railroad wrought.....	13.50 to 14.00
Railroad malleable.....	18.50 to 19.00
Light bundled sheet stampings..	12.25 to 12.75
Steel axle turnings.....	15.50 to 16.00
No. 1 cast.....	18.00 to 18.50
No. 1 busheling.....	14.25 to 14.75
Drop forge flashings.....	13.00 to 13.50
Railroad grate bars.....	13.50 to 13.75
Stove plate.....	13.50 to 13.75
Pipes and flues.....	12.00 to 12.25

### Scraping the Ford Steel Ships

WASHINGTON, Aug. 18.—No definite plan for scrapping the 200 steel ships recently purchased by the Ford Motor Co. has been determined upon. This statement was made today to THE IRON AGE by Chief Engineer Mayo of the Ford company, who was seen at the offices of the Shipping Board. His comment was made as the result of published reports that 110 steel ships would be scrapped at the plant of the Sun Ship Building Co., Chester, Pa. Considerable interest has been manifested in the scrap trade as to whether the vessels would be broken up on the Atlantic seaboard or moved to Detroit to be converted into scrap.

## Philadelphia

### Pig Iron Firmer, Coke Up in Price, Some Steel Products Weaker

PHILADELPHIA, Aug. 18.—A confused price situation has developed within the week. Pig iron is stronger and slightly higher in price, coke prices are higher, while some finished steel products are weaker, with steel bars selling in many cases at \$2 a ton below their recent minimum. Meanwhile scrap prices have stood still for the first time in several weeks. And on top of all this local steel warehouses are making a desperate effort to increase selling prices, a leading jobber having resorted to large display newspaper advertising to convince steel users that jobbers should have a larger profit.

The stronger pig iron situation is due largely to the well sold-up condition of most of the Eastern furnaces. Considerable basic iron has figured in the month's transactions, the total being around 35,000 tons. The minimum on foundry iron is now \$20.50, base. In this market furnace coke is being quoted at \$3.25 and foundry coke at \$5, with a little still available at \$4.

The break in steel bars apparently originated with Pittsburgh mills. Sales have been made by two or three mills at 1.90c., Pittsburgh, whereas 2c. was recently said to be quite firm. So far as the Eastern mills are concerned there is no change on shapes and plates, but Pittsburgh mills are now meeting Eastern competition.

**Pig Iron.**—From the producers' viewpoint the pig iron situation is decidedly better. Foundry iron now is very firm at \$20.50, base, with \$21 quoted on No. 2X, and all sales during the week were at these figures or higher, some furnaces asking \$21, base, for lots as small as a single carload. The market has gained strength slowly but surely since the first of the month, and a reason for it lies in the substantial sales of basic pig iron. It now appears that fully 35,000 tons of basic has been sold this month. A plate manufacturer, who was reported to have bought 10,000 tons about two weeks ago, increased this to about 16,000 tons and has since purchased 2500 tons of copper bearing basic. Another plate manufacturer bought about 5000 tons, and still another steel company in the East has closed for about 12,000 tons. In addition the Pennsylvania Railroad closed for a small tonnage of high manganese basic. There have also been fairly substantial sales of foundry iron, with the result that most of the furnaces in this district have three to four months' business on their books. Were it not for the low prices still quoted on foreign iron, namely, \$20 to \$20.50, c.i.f. Philadelphia, duty paid, Eastern iron would undoubtedly make further gains. If the price of coke goes higher further advances may come regardless of the foreign iron situation. Furnace coke was being quoted here today by all brokers at \$3.25, Connellsburg, while some had raised their price for foundry coke to \$5, ovens.

The following quotations are, with the exception of those on low phosphorus iron, for delivery at Philadelphia and include freight rate varying from 76c. to \$1.63 per gross ton:

East. Pa. No. 2 plain, 1.75 to 2.25 sil.	\$21.26 to \$21.63
East. Pa. 2X, 2.25 to 2.75 sil.	21.76 to 22.13
East. Pa. No. 1X.	22.26 to 22.63
Virginia No. 2 plain, 1.75 to 2.25 sil.	28.67 to 29.17
Virginia No. 2X, 2.25 to 2.75 sil.	29.17 to 29.67
Basic delivery eastern Pa.	20.50 to 21.50
Gray forge	21.00 to 22.00
Malleable	22.00 to 22.50
Standard low phos. (f.o.b. fur- nace)	22.00 to 23.00
Copper bearing low phos. (f.o.b. furnace)	22.50 to 23.50

**Ferroalloys.**—While demand for ferromanganese shows a slight improvement, there are no large orders, consumers covering for only a part of their usual requirements. The price is unchanged at \$115, seaboard furnace.

**Billets.**—Rerolling billets are quoted at \$35, and forging billets at \$40, Pittsburgh. There are few sales.

**Plates.**—Pittsburgh mills are now meeting the com-

petition of Eastern mills on plates and are quoting 1.80c. Orders are running small, but the aggregate continues about the same as in recent weeks.

**Structural Material.**—Bids were opened by the City of Philadelphia today (Tuesday) on another section of the Broad Street subway, which will take 12,000 tons of steel. Patrick McGovern, New York, was low bidder. The steel contract has not been placed, but for another section which Patrick McGovern is building the steel was obtained from the American Bridge Co. The city rejected all bids on building No. 1 of the Sesqui-Centennial Exposition, and it is stated that the building will be erected by individual contracts. The price situation on shapes is little changed, except that Pittsburgh mills are now accepting business at 1.90c. Some of the Eastern mills continue to accept lower prices, frequently 2c. to 2.05c., f.o.b. mill.

**Bars.**—Most of the larger users of steel bars have recently been getting 1.90c., Pittsburgh, a \$2 per ton concession from the recent minimum, and this price has become fairly general within the past week. On iron bars Eastern mills quote 2.17c. to 2.22c., Philadelphia.

**Sheets.**—The price situation on sheets seems to be strengthening slowly. Some business in galvanized sheets is now being done at 4.30c., Pittsburgh, although 4.20c. has not disappeared, while on black sheets 3.10c. is less common, and the usual range is 3.15c. to 3.20c. Sales of blue annealed sheets are being made at 2.25c. and 2.30c., Pittsburgh, but nothing lower has been reliably reported.

**Warehouse Business.**—An unusual effort has been made by one of the leading Philadelphia steel jobbing houses, Horace T. Potts & Co., to end the price demoralization which has existed in warehouse prices for many weeks. Last Friday the Potts firm used large display space in all of the Philadelphia newspapers, addressing a message to users of iron and steel as follows: "We believe a frank statement is due to buyers of iron and steel from Philadelphia warehouse. Speaking of the Philadelphia district THE IRON AGE of Aug. 6 says, 'The volume of business is fairly satisfactory, but jobbers complain of ruinous price competition.' Today all Philadelphia warehouses are selling at prices below a living basis and some below cost. A continuation means restricted stocks, reduction of quality, curtailment of delivery service." A comparison of prices with all warehouse centers followed, in which it was shown that the spread in Pittsburgh, Chicago and New York is \$18 per net ton, while in Philadelphia the recent selling prices of steel bars has permitted a spread of only \$9.60 to \$11.60. This statement was added: "We firmly believe that Philadelphia manufacturers do not need nor desire prices \$6 to \$7 a ton lower than those prevailing in other cities. It is to the best interest of every buyer that stable conditions prevail, and we ask your support to this end. We realize the absolute necessity of someone taking the lead in the elimination of price demoralization . . ." The announcement of an advance to 3.20c. per lb. on steel bars was the final statement. Meanwhile the price situation continues very much the same as a week ago. We quote for local delivery as follows:

Soft steel bars and small shapes, 2.90c.; iron bars (except bands), 2.90c.; round edge iron, 3.50c.; round edge steel, iron finished, 1½ x 1½ in., 3.50c.; round edge steel planished, 4.30c.; tank steel plates, ¼ in. and heavier, 2.90c.; tank steel plates, ½ in., 3.05c. to 3.10c.; blue annealed steel sheets, No. 10 gage, 3.35c.; black sheets, No. 28 gage, 4.35c.; galvanized sheets, No. 28 gage, 5.45c.; square, twisted and deformed steel bars, 2.85c.; structural shapes, 2.80c.; diamond pattern plates, ¼-in., 5.30c.; ½-in., 5.50c.; spring steel, 5c.; rounds and hexagons, cold-rolled steel, 4c.; squares and flats, cold-rolled steel, 4.50c.; steel hoops, 4c. base; steel bands, No. 12 gage to ½ in., inclusive, 3.75c.; rails, 3.20c.; tool steel, 8.50c.; Norway iron, 6.50c.

**Imports.**—Seventeen hundred tons of Indian iron and 50 tons of Dutch iron came in last week. Luxembourg shipped 63 tons of structural steel and 16 tons of bars came from Sweden.

**Old Material.**—For the first time in weeks scrap prices have remained almost stationary within the past

(Concluded on page 510)

## Prices of Finished Iron and Steel Products (Carload Lots)

### Tank Plates

F.o.b. Pittsburgh mill, base, per lb..... 1.80c. to 1.90c.  
F.o.b. Chicago, base, per lb..... 2.10c.

### Structural Shapes

F.o.b. Pittsburgh mill, base, per lb..... 1.90c. to 2c.  
F.o.b. Chicago, base, per lb..... 2.10c.

### Iron and Steel Bars

Soft steel bars, f.o.b. P'gh mills, base, per lb..... 1.90c. to 2c.  
Soft steel bars f.o.b. Chicago, base, per lb..... 2.10c.  
Reinforcing steel bars f.o.b. P'gh mills, per lb..... 1.90c. to 2c.  
Rail steel bars, f.o.b. Chicago and f.o.b. Chicago district  
mills, base, per lb..... 2.00c.  
Common iron bars, f.o.b. Chicago, base, per lb..... 1.90c. to 2.00c.  
Refined iron bars, f.o.b. P'gh mills, base, per lb..... 3.90c.  
Common iron bars, eastern Pa. mill, base, per lb..... 2.10c.

### Hot-Rolled Flats

Hoops, base (6 in. and narrower), per lb., Pittsburgh 2.40c.  
Bands, base (6 in. and narrower), per lb., Pittsburgh 2.40c.  
Strips, 6 in. and narrower, base, per lb., Pittsburgh..... 2.40c.  
Strips, wider than 6 in., base, per lb., Pittsburgh..... 2.20c.  
Strips, 6 in. and narrower, Chicago..... 2.40c. to 2.50c.  
Strips, wider than 6 in., Chicago..... 2.30c. to 2.40c.  
Cotton ties, per 45 lb. bundle, f.o.b. Atlantic ports..... \$1.28  
Cotton ties, per 45 lb. bundle, f.o.b. Gulf ports..... 1.25

### Cold-Finished Steel

Screw stock and shafting, f.o.b. P'gh mills, base, per lb. 2.50c.  
Screw stock and shafting, f.o.b. Chicago, base, per lb. 2.50c.  
Screw stock, base, per lb., Cleveland..... 2.55c.  
Shafting, ground, f.o.b. mill, base, per lb..... 3.00c.  
Strips, f.o.b. P'gh mills, base, per lb..... 3.75c.  
Strips, f.o.b. Cleveland mills, base, per lb..... 3.75c.  
Strips, f.o.b. delivered Chicago, base, per lb..... 4.05c.  
Strips, f.o.b. Worcester mills, base, per lb..... 3.90c.

### Wire Products

(To jobbers in car lots f.o.b. Pittsburgh and Cleveland)

Nails, base, per keg..... \$2.65  
Galvanized nails, 1-in. and longer, base plus..... 2.00  
Galvanized nails, shorter than 1 in., base plus..... 2.25  
Bright plain wire, base, No. 9 gage, per 100 lb..... 2.50  
Annealed fence wire, base, per 100 lb..... 2.65  
Spring wire, base, per 100 lb..... 3.50  
Galvanized wire, No. 9, base, per 100 lb..... 3.10  
Galvanized barbed, base, per 100 lb..... 3.35  
Galvanized staples, base, per keg..... 3.35  
Painted barbed wire, base, per 100 lb..... 3.10  
Polished staples, base, per keg..... 3.10  
Cement coated nails, base, per count keg..... 1.85  
\*Bale ties, carloads, to jobbers..... 75, 15 and 5 per cent off list  
\*Bale ties, carloads, to retailers..... 75, 10 and 6 per cent off list  
Woven wire fence, base, per net ton to retailers..... \$65  
Chicago district mill and delivered Chicago prices are \$1 per ton above the foregoing. Birmingham mill prices \$3 a ton higher; Worcester, Mass., mill \$3 a ton higher on production of that plant, and Duluth, Minn., mills \$2 a ton higher; Anderson, Ind., \$1 higher.

\*F.o.b. Cleveland.

### Sheets

#### Blue Annealed (base) per lb.

Nos. 9 and 10, f.o.b. Pittsburgh..... 2.30c.  
Nos. 9 and 10 (base) per lb., f.o.b. Chicago dist. mills,  
2.40c. to 2.45c.

#### Box Annealed, One Pass Cold Rolled

No. 23 (base) per lb., f.o.b. Pittsburgh..... 3.15c. to 3.20c.  
No. 28 (base) per lb., f.o.b. Chicago dist. mill..... 3.30c. to 3.35c.

#### Galvanized

No. 28 (base) per lb., f.o.b. Pittsburgh..... 4.20c. to 4.30c.  
No. 28 (base) per lb., f.o.b. Chicago dist. mill..... 4.35c. to 4.40c.

#### Tin-Mill Black Plate

No. 28 (base) per lb., f.o.b. Pittsburgh..... 3.15c. to 3.20c.  
No. 28 (base) per lb., f.o.b. Chicago dist. mill..... 3.25c. to 3.40c.

#### Automobile Body Sheets

No. 22 (base) per lb., f.o.b. Pittsburgh..... 4.25c.

#### Long Ternes

No. 28 (base) 8-lb. coating, per lb., f.o.b. mill..... 4.60c. to 4.75c.

#### Tin Plate

#### (F.o.b. Morgantown or Pittsburgh)

(Per package, 20 x 28 in.)

8-lb. coating, 100 lb. base.....	\$11.20	20-lb. coating I. C. ....	\$15.50
8-lb. coating I. C. ....	11.50	25-lb. coating I. C. ....	17.00
15-lb. coating I. C. ....	14.35	30-lb. coating I. C. ....	18.35
40-lb. coating I. C. ....	20.35		

### Rivets

Large, f.o.b. P'gh and Cleveland mills, base, per 100 lb., \$2.40 to \$2.50  
Large, f.o.b. Chicago, base, per 100 lb..... 2.50 to 2.60  
Small, f.o.b. Pittsburgh..... 70 and 10 per cent off list  
Small, Cleveland..... 70 and 10 to 70, 10 and 10 per cent off list  
Small, Chicago..... 70, 10 and 5 per cent off list

### Rails and Track Equipment

(F.o.b.)

Rails, standard, per gross ton.....	\$43.00
Rails, light, billet, base, per lb.....	1.60c. to 1.70c.
Rails, light rail steel, base, per lb.....	1.50c. to 1.60c.
Spikes, 1 in. and larger, base, per 100 lb.....	\$2.80 to \$3.00
Spikes, 1/2 in. and smaller, base, per 100 lb.....	3.00 to 3.25
Spikes, boat and barge, base, per 100 lb.....	3.25
Track bolts, all sizes, base, per 100 lb.....	3.90 to 4.25
Tie plates, per 100 lb.....	2.35 to 2.40
Angle bars, base, per 100 lb.....	2.75

### Welded Pipe

(F.o.b. Pittsburgh district mills)

#### Butt Weld

Steel	Black	Galv.	Iron	Black	Galv.
Inches			Inches		
1/4	45	19 1/2	1/4 to 1/2	+11	+39
5/16 to 3/8	51	25 1/2	1/2	22	2
1/2	56	42 1/2	3/4	28	11
5/8	60	48 1/2	1 to 1 1/2	30	13
1 to 3	62	50 1/2			

#### Lap Weld

2	55	43 1/2	2	23	7
2 1/2 to 6	59	47 1/2	2 1/2	26	11
7 and 8	56	43 1/2	3 to 6	28	13
9 and 10	54	41 1/2	7 to 12	26	11
11 and 12	53	40 1/2			

#### Butt, Weld, extra strong, plain ends

1/4	41	24 1/2	2 to 3	61	50 1/2
1/4 to 3/8	47	30 1/2	1/4 to %	+11	+54
1/2	53	42 1/2	1/2	21	7
5/8	58	47 1/2	3/4	28	12
1 to 1 1/2	60	49 1/2	1 to 1 1/2	30	14

#### Lap Weld, extra strong, plain ends

2	53	42 1/2	2	23	9
2 1/2 to 4	57	46 1/2	2 1/2 to 4	29	15
4 1/2 to 6	56	45 1/2	4 1/2 to 6	28	14
7 to 8	52	39 1/2	7 to 8	21	7
9 and 10	45	32 1/2	9 to 12	16	2
11 and 12	44	31 1/2			

To the large jobbing trade the above discounts on steel pipe are increased (on black) by one point, with supplementary discount of 5 per cent and (on galvanized) by 1 1/2 points, with supplementary discount of 5 per cent. On iron pipe, both black and galvanized, the preferentials to large jobbers are 1, 5 and 2 1/4 per cent beyond the above discount.

Note—The above discounts on steel pipe also apply at Lorain Ohio. Chicago district mills have a base 2 points less. Chicago delivered base 2 1/2 points less. Freight is figured from Pittsburgh, Lorain, Ohio, and Chicago district mills, the billing being from the point having the lowest rate to destination.

### Boiler Tubes

(F.o.b. Pittsburgh)

Lap Welded Steel	Charcoal Iron
2 to 2 1/4 in.	27
2 1/2 to 2 3/4 in.	37
3 in.	40
3 1/4 to 3 1/2 in.	42 1/2
4 to 13 in.	46
	3 1/4 to 4 1/2 in.

Beyond the above discounts, 5 fives extra are given on lap welded steel tubes and 2 tens on charcoal iron tubes.

#### Standard Commercial Seamless Boiler Tubes

##### Cold Drawn

1 in.	60	3 in.	45
1 1/4 and 1 1/2 in.	52	3 1/4 to 3 1/2 in.	47
1 1/2 in.	36	4 in.	50
2 to 2 1/4 in.	31	4 1/2, 5 and 6 in.	45
2 1/2 and 2 3/4 in.	39		

##### Hot-Rolled

2 and 2 1/4 in.	34	3 1/4 to 3 1/2 in.	50
3 1/2 and 2 3/4 in.	42	4 in.	53
3 in.	48	4 1/2, 5 and 6 in.	48

Less carloads, 4 points less. Add \$8 per net ton for more than four gages heavier than standard. No extra for lengths up to and including 24 ft. Sizes smaller than 1 in. and lighter than standard gage to be held at mechanical tube list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

#### Seamless Mechanical Tubing (Old List)

Carbon under 0.30 base..... 86 to 88 per cent off list

Carbon 0.30 to 0.40 base..... 84 to 86 per cent off list

Plus usual differentials and extra for cutting. Warehouse discounts range higher.

#### Seamless Mechanical Tubing (New List)

Carbon 0.10 to 0.30 base..... 55 per cent off list

Carbon 0.30 to 0.40 base..... 50 per cent off list

Plus differentials for lengths over 18 ft. and for commercially exact lengths.

## Prices of Iron and Steel Products and Raw Materials

### Ores

<i>Lake Superior Ores, Delivered Lower Lake Ports</i>	
Old range Bessemer, 51.50 per cent iron.	\$4.55
Old range non-Bessemer, 51% per cent iron.	4.40
Mesaba Bessemer, 51.50 per cent iron.	4.40
Mesaba non-Bessemer, 51.50 per cent iron.	4.25
High phosphorus iron, 51.50 per cent.	4.15
<i>Foreign Ore, per Unit, c.i.f. Philadelphia or Baltimore</i>	
Iron ore, low phos., copper free, 55 to 58 per cent iron in dry Spanish or Algerian	9.50c. to 10c.
Iron ore, Swedish, average 66 per cent iron	9.50c.
Manganese ore, washed, 51 per cent manganese, from the Caucasus.	45c.
Manganese ore, Brazilian or Indian, nominal	42c.
Tungsten ore, high grade, per unit, in 60 per cent concentrates.	\$11.00 to \$11.50
Chrome ore, Indian basic, 48 per cent Cr <sub>2</sub> O <sub>3</sub> , crude, per ton, c.i.f., Atlantic seaboard	20.00 to 24.00
Molybdenum ore, 85 per cent concentrates, per lb. of MoS <sub>2</sub> , New York.	65c. to 70c.

### Coke and Coal

(Per Net Ton)

Furnace coke, f.o.b. Connellsburg prompt.	\$3.25
Foundry coke, f.o.b. Connellsburg prompt.	\$4.00 to 4.50
Mine run steam coal, f.o.b. W. Pa. mines.	1.50 to 2.00
Mine run coking coal, f.o.b. W. Pa. mines.	1.50 to 1.75
Mine run gas coal, f.o.b. W. Pa. mines.	2.00 to 2.25
Steam slack, f.o.b. W. Pa. mines.	1.35 to 1.40
Gas slack, f.o.b. W. Pa. mines.	1.40 to 1.60

### Ferroalloys

Ferromanganese, domestic, 80 per cent, furnace, or seaboard, per ton.	\$115.00
Ferromanganese, foreign, 80 per cent, f.o.b. Atlantic port, duty paid.	115.00
Ferrosilicon, 50 per cent, delivered.	82.50 to 85.00
Ferrosilicon, 75 per cent.	145.00 to 147.50
Ferrotungsten, per lb. contained metal.	1.00
Ferrochromium, 4 per cent carbon and up, 60 to 70 per cent Cr., per lb. contained Cr. delivered	11.50c.
Ferrovanadium, per lb. contained vanadium	\$3.50 to \$4.00
Ferrocarbontitanium, 15 to 18 per cent, per net ton	200.00

### Spiegeleisen, Bessemer Ferrosilicon and Silvery Iron

(Per gross ton furnace unless otherwise stated)

Spiegeleisen, domestic, 19 to 21 per cent.	\$32.00
Spiegeleisen, domestic, 16 to 19 per cent.	31.00
Ferrosilicon, Bessemer, 10 per cent, \$33; 11 per cent, \$35; 12 per cent, \$37; electric furnace ferrosilicon, 10 per cent, \$38; furnace with an advance of \$1 per unit for material above 10 per cent.	
Silvery iron, 6 per cent, \$24; 7 per cent, \$25; 8 per cent, \$25 to \$26; 9 per cent, \$27.50; 10 per cent, \$29; 11 per cent, \$31; 12 per cent, \$33.	

### Fluxes and Refractories

Fluorspar, 85 per cent and over calcium fluoride, not over 5 per cent silica, gravel, per net ton, f.o.b. Illinois and Kentucky mines.	\$16.00
No. 2 lump, per net ton.	19.00
Fluorspar, foreign, 85 per cent calcium fluoride, not over 5 per cent silica, c.i.f. Philadelphia, duty paid, per net ton.	15.00 to 16.00
Fluorspar, No. 1 ground bulk, 95 to 98 per cent calcium fluoride, not over 2½ per cent silica, per net ton, f.o.b. Illinois and Kentucky mines.	32.50
Per 1000 f.o.b. works:	
Fire Clay	
Pennsylvania	High Duty \$43.00 to \$46.00
Maryland	48.00 to 50.00
Ohio	43.00 to 46.00
Kentucky	43.00 to 45.00
Illinois	43.00 to 45.00
Missouri	40.00 to 43.00
Ground fire clay, per ton.	6.50 to 7.50
Silica Brick:	
Pennsylvania	40.00
Chicago	49.00
Birmingham	54.00
Silica clay, per ton.	8.00 to 9.00
Magnesite Brick:	
Standard size, per net ton (f.o.b. Baltimore and Chester, Pa.)	65.00
Grain magnesite, per net ton (f.o.b. Baltimore and Chester, Pa.)	40.00
Chrome Brick:	
Standard size, per net ton.	48.00

### Bolts and Nuts

(F.o.b. Pittsburgh, Cleveland, Birmingham and Chicago)	
Machine bolts, small rolled threads.	.60 and 10 per cent off list
Machine bolts, all sizes, cut threads.	50, 10 and 10 per cent off list
Carriage bolts, smaller and shorter, rolled threads.	50, 10 and 10 per cent off list
Carriage bolts, cut threads, all sizes.	50 and 10 per cent off list
Eagle carriage bolts.	.65 and 10 per cent off list
Lag bolts.	.60, 10 and 10 per cent off list
Plow bolts, Nos. 1, 2 and 3 heads.	.50 and 10 per cent off list

Other style heads	20 per cent extra
Machine bolts, c.p.c. and t. nuts, $\frac{1}{2}$ x 4 in.	45, 10 and 5 per cent off list

Larger and longer sizes.....45, 10 and 5 per cent off list

Hot-pressed nuts, blank and tapped, square.....4c. off list

Hot-pressed nuts, blank or tapped, hexagons.....4.40c. off list

Bolt ends with hot pressed nuts..50, 10 and 10 per cent off list

Bolt ends with cold pressed nuts..45, 10 and 5 per cent off list

Washers\*.....6.10c. to 6c. off list

\*F.o.b. Chicago and Pittsburgh.

The discount on machine, carriage and lag bolts is 5 per cent less than above for less than car lots. On hot pressed and cold punched nuts the discount is 25c. less per 100 lb. than quoted above for less than car lots.

(Quoted with freight allowed within zone limits)

Semi-finished hex. nuts:

$\frac{1}{8}$  in. and smaller, U. S. S.....80 and 5 per cent off list

$\frac{1}{4}$  in. and larger, U. S. S.....75 and 5 per cent off list

Small sizes, S. A. E.....80, 10, and 5 per cent off list

S. A. E.,  $\frac{1}{8}$  in. and larger.....75, 10 and 5 per cent off list

Stove bolts in packages.....80, 10, and 5 per cent off list

Stove bolts in bulk.....80, 10, 5 and 2½ per cent off list

Tire bolts.....50, 10 and 5 per cent off list

### Semi-Finished Castellated and Slotted Nuts

(Prices delivered within specified territories)

(To jobbers and consumers in large quantities)

S. A. E. U. S. S.	Per 100 Net		S. A. E. U. S. S.	Per 100 Net	
	%-in.	1-in.		%-in.	1-in.
.044	\$0.44	\$0.44	.044	\$2.35	\$2.40
.515	.515	.515	.515	3.60	3.60
.62	.66	.66	.66	5.65	5.80
.79	.90	.90	.90	8.90	8.90
1.01	1.05	1.05	1.05	12.60	13.10
1.38	1.42	1.42	1.42	18.35	18.35
1.70	1.73	1.73	1.73	21.00	21.00

Larger sizes—Prices on application.

### Cap and Set Screws

(Freight allowed within zone limits)

Milled cap screws.....80, 10 and 5 per cent off list

Milled standard set screws, case hardened.

80 and 10 per cent off list

Milled headless set screws, cut thread.

80 and 10 to 80 per cent off list

Upset hex. head cap screws, U. S. S. Thread,

80, 10, 10 and 5 per cent off list

Upset hex. cap. screws, S. A. E. Thread

80, 10 and 5 per cent off list

Upset set screws.....80, 10 and 10 per cent off list

Milled studs.....75 per cent off list

Semi-Finished Steel, f.o.b. Pittsburgh or Youngstown, per gross ton

Rolling billets, 4-in. and over.	\$35.00
Forging billets, ordinary.	40.00
Forging billets, guaranteed.	45.00
Sheet bars.	35.00
Slabs.	35.00
*Wire rods, common soft, base, No. 5 to $\frac{1}{2}$ -in.	45.00
Wire rods, common soft, coarser than $\frac{1}{2}$ -in.	\$2.50 over base
Wire rods, screw stock.	\$5.00 per ton over base
Wire rods, carbon 0.20 to 0.40.	3.00 per ton over base
Wire rods, carbon 0.41 to 0.55.	5.00 per ton over base
Wire rods, carbon 0.56 to 0.75.	7.50 per ton over base
Wire rods, carbon over 0.75.	10.00 per ton over base
Wire rods, acid.	15.00 per ton over base
Skelp, grooved, per lb.	1.90c.
Skelp, sheared, per lb.	1.90c.
Skelp, universal, per lb.	1.90c.

\*Chicago mill base is \$46. Cleveland mill base, \$45.

### Alloy Steel

(F.o.b. Pittsburgh or mill)

S. A. E. Series Numbers	Bars 100 lb.
2100* (1½% Nickel, 10 to 20 per cent Carbon)	\$3.00 to \$3.25
2300 (3% Nickel)	4.50 to 4.75
2500 (5% Nickel)	5.75 to 6.00
3100 (Nickel Chromium)	3.50 to 3.65
3200 (Nickel Chromium)	5.00 to 5.25
3300 (Nickel Chromium)	7.50 to 7.75
3400 (Nickel Chromium)	6.25 to 6.50
5100 (Chromium Steel)	3.25 to 3.50
5200* (Chromium Steel)	7.50 to 8.00
6100 (Chromium Vanadium bars)	4.25 to 4.50
6100 (Chromium Vanadium spring steel)	4.00 to 4.25
9250 (Silicon Manganese spring steel)	3.25 to 3.50
Carbon Vanadium (0.45 to 0.55 Carbon, 0.15 Vanadium)	4.00 to 4.25
Nickel Chrome Vanadium (0.60 Nickel, 0.50 Chromium, 0.15 Vanadium)	4.50
Chromium Molybdenum bars (0.80—1.10 Chromium, 0.25—0.40 Molybdenum)	4.25
Chromium Molybdenum bars (0.50—0.70 Chromium, 0.15—0.25 Molybdenum)	3.75
Chromium Molybdenum spring steel (1—1.25 Chromium, 0.30—0.50 Molybdenum)	4.75 to 5.00

Above prices are for hot-rolled steel bars, forging quality. The ordinary differential for coal drawn bars is 1c. per lb. higher. For billets 4 x 4 to 10 x 10-in. the price for a gross ton is the net price for bars of the same analysis. For billets under 4 x 4-in. down to and including 2½-in. squares, the price is \$5 a gross ton above the 4 x 4 billet price.

\*Not S. A. E. specifications, but numbered by manufacturers to conform to S. A. E. system.

## FABRICATED STEEL

### July Bookings 82 Per Cent of Capacity Against 87 for June

WASHINGTON, Aug. 18.—Based on reports from 175 firms with a monthly capacity of 246,995 tons, bookings of fabricated structural steel in July amounted to 203,179 tons, or 82 per cent of capacity, as against 87 per cent of capacity, reported by 185 firms in June, according to the Bureau of the Census. Computed bookings in July totaled 237,800 tons, as against 252,300 tons in June. July shipments reported were 249,400 tons, or 86 per cent of capacity, compared with 229,100 tons, or 79 per cent of capacity, in June.

### Fabricated Awards Continue Large

Structural steel work placed under contract within the past week, as reported to THE IRON AGE, totaled about 36,000 tons, which is in line with recent weeks. The largest award was 6000 tons for transmission towers for the Southern California Edison Co. Inquiries total nearly 28,000 tons. Both in awards and inquiries the greatest activity is in New York and Chicago and in California. Awards include:

Academy of Music, 125 East Thirteenth Street, New York, 900 tons, to Taylor-Fichter Steel Construction Co.  
 Hotel York, Seventh Avenue, New York, alterations, 300 tons, to Taylor-Fichter Steel Construction Co.  
 Garage, Hartford, Conn., 150 tons, to Bethlehem Fabricators, Inc.  
 Southern Railway, bridges, 1500 tons, to Virginia Bridge & Iron Co.  
 Power plant in Texas, 1300 tons, to Virginia Bridge & Iron Co.  
 Jersey City approach to New York-New Jersey vehicular tunnel, 1700 tons, to Bethlehem Steel Corporation.  
 Pennsylvania Railroad, Lehigh Avenue bridge, Philadelphia, 650 tons, to Bethlehem Steel Corporation.  
 General Hospital, Philadelphia, 2100 tons, to McClintic-Marshall Co.  
 State of Connecticut, highway bridge, 375 tons, to Berlin Construction Co.  
 Globe Exchange Bank, Brooklyn, 500 tons, to Hinkle Iron Co.  
 Apartment building, Park Avenue and Ninety-second Street, New York, 1200 tons, to A. E. Norton, Inc.  
 Garage, West Sixty-ninth Street, New York, 600 tons, to Hinkle Iron Co.  
 Sharon Steel Hoop Co., Youngstown, shear building, 400 tons, to Blaw-Knox Co.  
 Schoolhouse No. 114, New York, 500 tons, to Jones & Laughlin Steel Corporation.  
 International Harvester Co., service station addition, Milwaukee, 150 tons, to Lakeside Bridge & Steel Co.  
 Goodyear Tire & Rubber Co., Akron, Ohio, 2000 tons, to American Bridge Co.  
 Grabler Mfg. Co., Cleveland, factory building, 800 tons, to the McClintic-Marshall Co.  
 East high school, Buffalo, 1000 tons, to Robert McMannus, First National Bank, Painesville, Ohio, 200 tons, to the Forest City Structural Steel Co.  
 Highway bridge at Rockrift, N. Y., 160 tons, to McClintic-Marshall Co.  
 Mack International Motor Truck Corporation, Chicago, plant, 700 tons, to McClintic-Marshall Co.  
 Union Pacific System, bridge spans, Montebello, Cal., 180 tons, to American Bridge Co.  
 State Theatre building, Sioux Falls, S. D., 150 tons, to Saint Paul Foundry Co.  
 Alameda County, California, vehicular tube between Oakland and Alameda, tie rods and fittings, 700 tons, to McClintic-Marshall Co.; grillage beams, ribs and hangers, 200 tons, to Central Iron Works; remainder, 140 tons, to Main Iron Works.  
 Magnolia Petroleum Co., oil storage tanks, Beaumont, Tex., 2500 tons, to unnamed fabricator.  
 Prisble apartments, Fort Wayne, Ind., 300 tons, to Fort Wayne Dairy Equipment Co.  
 Great West Sugar Co., plant, Johnstown, Colo., 800 tons, to McClintic-Marshall Co.  
 Bank of Italy office building, San Jose, Cal., 1000 tons, to Dyer Brothers.

Sun Realty Co., office building, Seventh and Flower Streets, Los Angeles, 1300 tons, to Llewellyn Iron Works.

Sun Realty Co., hotel, Seventh Street, Los Angeles, 1700 tons, to Llewellyn Iron Works.

La Puente Valley county water district, pipe line, 250 tons, to Western Pipe & Steel Co.

Pacific Mutual Building addition, Sixth and Olive Streets, Los Angeles, Cal., 600 tons, to Llewellyn Iron Works.

Southern California Edison Co., Los Angeles, Cal., transmission towers, 6000 tons; to Newport News Shipbuilding Co., 4000 tons, and Pacific Coast Steel Co., 2000 tons.

Bank of Italy, Stockton, Cal., 800 tons, to Dyer Brothers.

Apartment, Mission and Twenty-sixth Streets, San Francisco, Cal., 100 tons, to Golden Gate Iron Works.

Ventura National Bank, Ventura, Cal., 175 tons, to Pacific Structural Iron Works.

Government hospital, Canacao, P. I., 100 tons, to unnamed fabricator, through J. E. Grant, Manila, P. I., general contractor.

Southern Pacific Equipment Co., San Francisco, Cal., 800 tons, to unnamed mill.

Pacific Oil Co., Los Angeles, Cal., one 55,000-bbl. tank, 200 tons, to Lacy Mfg. Co.

General Petroleum Corporation, Los Angeles, Cal., 500 tons, to unnamed fabricator.

### Structural Projects Pending

Frank & Frank, loft building, Eighth Avenue and Thirty-sixth Street, New York, 6000 tons.

Childs' Restaurant, 421 Seventh Avenue, New York, 1100 tons; plans being revised.

Office building, 10-14 West Forty-seventh Street, New York, 700 tons.

Loft building, 345-351 West Fifty-fifth Street, New York, 1000 tons.

Loft building, 19 East Fifty-third Street, New York, 400 tons.

Cranleigh Hospital, 161 East Nineteenth Street, New York, 600 tons.

Realty Managers, apartment building, Fifth Avenue and Eighty-fifth Street, New York, 1500 tons.

Theater, Fourteenth Street and Avenue A, New York, 500 tons.

Erie Railroad, bridges, 250 tons.

State of Pennsylvania, highway bridge, 250 tons.

State of South Carolina, highway bridge, 250 tons.

Delaware, Lackawanna & Western Railroad, bridge at Harrison, N. J., 275 tons.

A. O. Smith Corporation, Milwaukee, plant addition, 1300 tons.

Picadilly Theatre, Chicago, 1200 tons.

Mississippi Glass Co., plant, St. Louis, 500 tons.

Avalon Theater, Chicago, 500 tons.

Gas holder, Stockton, Cal., 2500 tons.

State of Washington, two highway bridges, 800 tons.

South Park Board, Chicago, five bridges, 2500 tons.

Cooperative apartment building, 900 North Michigan Avenue, Chicago, 1000 tons; Jarvis Hunt, architect.

Municipal reservoir, St. Louis, 700 tons of piling, general contract awarded to Missouri Engineering Co., St. Louis.

Philadelphia subways, 12,000 tons; bids opened Tuesday, Aug. 18, and Patrick McGovern, New York, was low bidder. Steel contract not awarded.

South Park bridge, Buffalo, 100 tons; bids taken.

Sterchi Building, Knoxville, Tenn., 800 tons.

Mead-Marquette Street Bridge, Racine, Wis., 200 tons.

Bids rejected and new tenders opened Aug. 19.

Eagles' Clubhouse at Milwaukee, 150 tons; Milwaukee Bridge Co. low bidder.

Southern Pacific Co., San Francisco, 300 tons. Bids in.

South San Joaquin Irrigation District, California, penstock job, about 1000 tons.

Terminal warehouse, Los Angeles, 800 tons.

Engine house, Santa Fe Railroad, Winslow, Cal., 200 tons.

Machine shop, California Portland Cement Co., Colton, Cal., 200 tons.

Elwa River bridge, Clallam County, Wash., 273 tons.

E. J. Lavino & Co., Philadelphia, manufacturer of ferromanganese and refractories, has opened a Chicago office at 723 Continental and Commercial Bank Building. H. W. Grigsby, formerly of the Pittsburgh office, is in charge of ferromanganese sales and H. W. Piggott, formerly of the Philadelphia office, is in charge of sales of refractories.

## NON-FERROUS METALS

### The Week's Prices

Cents Per Pound for Early Delivery

	Copper, New York	Straits		Lead		Zinc	
		Electro- lytic*	(Spot)	New York	New York	St. Louis	New York
August	Lake	Electro- lytic*					
12.....	14.87½	14.50	57.95	9.50	9.50	7.90	7.55
13.....	14.75	14.50	57.75	9.50	9.50	7.85	7.50
14.....	14.75	14.50	58.25	9.50	9.50	7.92½	7.57½
15.....	14.87½	14.50	.....	9.50	9.50	7.92½	7.57½
17.....	14.87½	14.50	57.75	9.50	9.50	7.97½	7.62½
18.....	14.87½	14.50	57.50	9.50	9.50	7.97½	7.62½

\*Refinery Quotation; delivered price ¼c. higher.

### New York

NEW YORK, Aug. 18.

Moderate buying characterizes most of the markets, and prices are firm. The copper market is quiet but steady. Buying of tin has been moderately active at slightly lower levels. Demand for lead continues heavy. Prices for zinc have advanced on better demand and for other causes.

**Copper.**—Demand for electrolytic copper has slackened considerably, and prices are a little easier. It is now generally admitted that the advance to 14.87½c., delivered, was a little too rapid, the market having attained that level a week ago. Since then there has been a slight recession, due partly to lower prices in London and to shading by certain sellers here. Practically all of the week the metal has been obtainable at a range of 14.75c. to 14.87½c., delivered. While most large producers are not selling under 14.87½c., there are still some interests who will shade this to 14.75c., delivered. There were indications today that metal under 14.87½c. was unobtainable any longer, but this was unconfirmed. Due to the slight easing in prices, buying has naturally slackened. Such transactions as have been made involve October delivery, and it is thought that considerable metal will still have to be bought. Lake copper is quoted at 14.87½c., delivered.

**Tin.**—Sales of Straits tin for the week ended Friday, Aug. 14, are estimated to have been 1600 to 1700 tons. The busiest day was Thursday, Aug. 13, when 700 tons exchanged hands. Consumers were the principal buyers, with dealers taking a fair proportion. Yesterday about 200 tons changed hands, but today transactions were very light. The feature of the market is the fact that buying has continued in spite of the probability that consumers are well covered. Spot Straights tin today was quoted at 57.50c., New York. Prices in London today were about £5 per ton less than a week ago, with spot standard quoted at £256 15s., future standard at £259 5s., and spot Straights at £262 10s. The Singapore price today was £264 10s. Arrivals thus far this month have been 5230 tons with 5190 tons reported afloat.

**Lead.**—Demand continues heavy. A true appraisal of quotations is almost impossible, so confused is the situation. Individual transactions involving small lots are made on a wide range of prices, both here and at St. Louis. Some consumers anxious for the metal are obliged to pay high prices, while others are able to obtain part of their needs from those to whom they always look for supplies. It is stated that a large proportion of the metal bought is going directly into consumption, and that buying for stock is comparatively light. The leading interest advanced its contract price at New York three times in the last week, the first time on Aug. 10 to 9c., the second on Aug. 13 to 9.15c., and the third time to 9.25c. on Aug. 14. Lead for early or 30-day delivery is quoted at about 9.50c., New York, and 9.50c., St. Louis.

**Zinc.**—Inquiry for consumers has been good for the last few days which, together with the attitude of sellers, has forced prices up until they are the highest at any time on this movement. There were two inquiries late last week involving 700 tons at least part

of which was sold at 7.62½c., St. Louis, or 7.97½c., New York, which today is regarded as the market.

**Nickel.**—Wholesale lots of ingot nickel are quoted unchanged at 34c. with shot nickel at 35c. Electrolytic nickel is quoted at 38c.

**Antimony.**—Spot Chinese metal continues scarce, but is a little easier than a week ago at 17.50c., New York, duty paid, with August arrival quoted at 17c.

**Aluminum.**—Virgin metal, 98 to 99 per cent pure, is quoted at 27 to 28c., delivered.

**Old Metals.**—Business is active and values are advancing. Dealers' selling prices are as follows in cents per lb.:

Copper, heavy and crucible .....	14.25
Copper, heavy and wire .....	13.25
Copper, light and bottoms .....	11.75
Heavy machine composition .....	10.75
Brass, heavy .....	9.00
Brass, light .....	7.75
No. 1 red brass or composition turnings .....	9.50
No. 1 yellow rod brass turnings .....	9.50
Lead, heavy .....	8.50
Lead, tea .....	7.00
Zinc .....	5.25
Cast aluminum .....	19.50
Sheet aluminum .....	19.50

### Chicago

AUG. 18.—Lead and zinc have advanced, tin has declined and the other metals remain unchanged. The situation in lead is exceedingly strong and the present effort of producers is to prevent a runaway market. Demand for the other metals is also satisfactory, the decline in tin having been in sympathy with London. Among the old metals there is only one change, an advance in lead pipe. We quote, in carload lots: Lake copper, 14.80c.; tin, 59c.; lead, 10.05c.; zinc, 7.70c.; in less than carload lots, antimony, 19.50c. On old metals we quote copper wire, crucible shapes and copper clips, 12c.; copper bottoms, 10.50c.; red brass, 9.25c.; yellow brass, 7.75c.; lead pipe, 8c.; zinc, 4.50c.; pewter, No. 1, 32.50c.; tin foil, 41c.; block tin, 46c.; all buying prices for less than carload lots.

### Chicago Iron and Steel Market

*(Concluded from page 497)*

delivered Cleveland, netted \$10.60 here. Railroad lists include the Santa Fe, 3650 tons, and the Grand Trunk, 1600 tons.

We quote delivery in consumers' yards, Chicago and vicinity, all freight and transfer charges paid, as follows:

Per Gross Ton
Iron rails .....
Cast iron car wheels .....
Relaying rails, 56 lb. to 60 lb. ....
Relaying rails, 65 lb. and heavier .....
Forged steel car wheels .....
Railroad tires, charging box size .....
Railroad leaf springs, cut apart .....
Rails for rolling .....
Steel rails, less than 3 ft. ....
Heavy melting steel .....
Frogs, switches and guards, cut apart .....
Shoveling steel .....
Drop forge flashings .....
Hydraulic compressed sheets .....
Axle turnings .....
Steel angle bars .....
Steel knuckles and couplers .....
Coil springs .....
Low phosph. punchings .....
Machine shop turnings .....
Cast borings .....
Short shoveling turnings .....
Railroad malleable .....
Agricultural malleable .....

Per Net Ton
Iron angle and splice bars .....
Iron arch bars and transoms .....
Iron car axles .....
Steel car axles .....
No. 1 busheling .....
No. 2 busheling .....
Pipes and flues .....
No. 1 railroad wrought .....
No. 2 railroad wrought .....
No. 1 machinery cast .....
No. 1 railroad cast .....
No. 1 agricultural cast .....
Locomotive tires, smooth .....
Stove plate .....
Grate bars .....
Brake shoes .....

## Philadelphia Iron and Steel Market

(Concluded from page 505)

several days. The undertone continues firm, but there is not enough important buying to boost the market further. The principal transactions were in heavy melting steel, small sales being made to a nearby mill at \$17.25, delivered. Scrap brokers point out that the price of heavy melting steel in the East is due to advance, as it is out of line with the Pittsburgh market. At Pittsburgh steel scrap is higher than basic pig iron, while in the East basic pig iron is at least \$4 a ton above heavy melting steel. There is great interest in the scrap trade, and also among consumers, in the plans of Henry Ford for scrapping the 200 boats recently bought from the Shipping Board. No definite plans have been announced, but it was reported a few days ago that the boats would be scrapped at a Delaware River shipyard. While this may not be correct, it is believed that the boats will be scrapped somewhere on the Atlantic Coast instead of at Detroit, as at first reported. It is surmised here that some of the scrap will be shipped abroad, as \$19.50 is obtainable in Italy, and this price would be very attractive to local sellers if the freight rate did not have to be considered. In the case of the Ford company it is pointed out that scrap can be shipped as ballast on boats carrying Ford automobiles abroad.

We quote for delivery, consuming points in this district, as follows:

No. 1 heavy melting steel.....	\$16.50 to \$17.50
Scrap rails .....	16.50 to 17.50
Steel rails for rolling .....	18.00 to 18.50
No. 1 low phos. heavy 0.04 and under .....	21.50 to 22.00
Couplers and knuckles .....	21.00 to 21.50
Rolled steel wheels .....	21.00 to 21.50
Cast iron car wheels.....	18.50 to 19.00
No. 1 railroad wrought.....	17.50 to 18.50
No. 1 yard wrought .....	17.00 to 17.50
No. 1 forge fire .....	15.00 to 15.50
Bundled sheets (for steel works) .....	14.00
Mixed borings and turnings (for blast furnace use) .....	12.50 to 13.50
Machine shop turnings (for steel works use) .....	14.00
Machine shop turnings (for rolling mill use) .....	14.00 to 14.50
Heavy axle turnings (or equivalent) .....	15.50 to 16.00
Cast borings (for steel works and rolling mill) .....	14.00 to 14.50
Cast borings (for chemical plant) .....	16.00 to 16.50
No. 1 cast .....	18.00 to 18.50
Heavy breakable cast (for steel plants) .....	17.00 to 17.50
Railroad grate bars .....	14.50 to 15.00
Stove plate (for steel plant use) .....	14.50 to 15.00
Wrought iron and soft steel pipes and tubes (new specifications) .....	16.50 to 17.00
Shafting .....	23.50 to 24.50
Steel axles .....	23.50 to 24.50

## Extension in Jones &amp; Laughlin Freight Rate Case

CHICAGO, Aug. 18.—A further extension of 30 days, until Oct. 18, has been granted by the Interstate Commerce Commission to railroads embraced in the Central Freight Association and the Illinois Freight Association, to comply with the commission's finding in the Jones & Laughlin case. In its decision in that case the commission set forth a new mileage scale of rates to apply on finished steel from Pittsburgh and Chicago, respectively, to points in Indiana and southern Illinois and to St. Louis. The railroads were given direction as to whether the scale would be applied strictly from point to point or whether a group plan would be employed, and they have not yet reached an agreement as to the preferable method. A hearing before the Illinois Freight Committee, Transportation Building, Chicago, Aug. 19, will be participated in by both shippers and carriers.

The Ford Chain Block Co., Philadelphia, through a recent purchase, acquires the patents, designs and equipment for the manufacture of the Motorbloc, an electrically operated chain hoist which has been manufactured for several years by the Motorbloc Corporation, also of Philadelphia. Beginning Sept. 1, all Motorblocs will be built in the plant of the Ford company, and sold as a Ford product.

## CAPACITY OVERRATED

## Inland Steel Co. Head Believes Country's Potential Output Rated Too High

CHICAGO, Aug. 18.—"I am thoroughly in accord with Mr. Topping's recommendation that present steel ingot ratings be revised," said L. E. Block, chairman of the board Inland Steel Co., Chicago, in commenting on the article by Chairman John A. Topping of the Republic Iron & Steel Co., published in THE IRON AGE of Aug. 6. "There is much obsolete or obsolescent Bessemer steel capacity, which while it has not been dismantled is rarely used. In fact various companies which have Bessemer steel making facilities added open-hearth furnaces not because they wished to expand their steel capacity but because they found it necessary to equip themselves to produce the kind of steel which was demanded by their customers. The existence of Bessemer capacity side by side with the newer open-hearth plants rarely indicates that the total capacity of a given producer is a sum of the two. In few, if any, instances have ore and scrap yards, coke and blast furnace plants expanded sufficiently to permit the operation of both the Bessemer and open-hearth capacity simultaneously. Moreover blooming and billet mills and finishing departments have not been sufficiently enlarged to take all the steel produced if all the converters and open-hearth furnaces were in operation.

"The American Iron and Steel Institute figures also fail to make allowance for high cost operations which cannot hope to resume production unless demand is unusually pressing and prices are extraordinarily high. Producers and consumers alike are interested in the practical maximum capacity of the country, not the total capacity which might be employed under conditions which are impossible of attainment."

"It is also improper to consider the unusual performances of record months as truly indicative of the actual potential capacity, year in and year out. It is a fact that records are frequently made in March and October when weather conditions are most favorable. These extraordinary outputs, however, are possible largely because plant organizations are keyed up to make a supreme effort."

## RAILROAD EQUIPMENT

## New York Central Inquiring for 75 Engines—Central of Georgia Buys 10

The principal railroad equipment prospects of the week are in locomotives. The New York Central is inquiring for 75. The New Haven road wants 10 electric engines. The Central of Georgia has ordered 10 locomotives from Baldwin. An order for 800 mine cars is the largest car order of the week. The chief items are the following:

The New York Central Railroad is inquiring for 75 locomotives.

The Berwind-White Coal Mining Co. has placed an order for 800 mine cars with the Bethlehem Steel Corporation.

The New York, New Haven & Hartford Railroad is in the market for 10 electric locomotives.

The Baldwin Locomotive Works has received an order for 10 Santa Fe type locomotives from the Central of Georgia Railroad.

The Delaware, Lackawanna & Western Railroad is inquiring for 15 passenger coaches.

The Mathieson Alkali Works has ordered 20 tank cars from the American Car & Foundry Co.

The Consolidated Lumber & Supply Co. has ordered 250 mine cars from the American Car & Foundry Co.

The Oliver Iron Mining Co. is in the market for 200 ore cars.

The Great Northern is expected to take early action on its pending inquiry for 250 ballast cars, having received propositions Aug. 15.

Figures on 1000 box cars for the Illinois Central go in this week, but the prices will be held open until Sept. 15.

The Gulf Coast Lines contemplate the purchase of 500 box cars, 250 gondola cars and a number of dining cars.

## PERSONAL

Col. James B. Dillard, general superintendent of the Cleveland Twist Drill Co., is general chairman of the various committees which have in charge the details of the seventh annual convention and steel exhibition of the American Society for Steel Treating, in Cleveland, Sept. 14 to 18. Colonel Dillard is a graduate of the United States Military Academy in 1904, and held various executive positions in the ordnance department of the United States Army from 1904 to 1920. During the World War he was chief of the engineering department division. He is a designer of many types of guns and gun carriages used by the American Army and installed in sea coast defenses. He resigned from the army April 2, 1920. He has written various contributions on ordnance subjects for technical journals and engineering societies. He received the distinguished service medal in 1918. He is a member of the American Society for Steel Treating, the American Society of Mechanical Engineers, the Society of Automobile Engineers, the Taylor Society, the Cleveland Engineering Society and the Ordnance Association. Colonel Dillard is taking a live interest in the arrangements for the various activities of the convention.

COL. J. B. DILLARD



John F. Hennessy, whose appointment as district sales manager of the Bethlehem Steel Co. at Chicago was mentioned last week, succeeding E. E. Goodwillie, who has been appointed steel sales representative of the company on the Pacific Coast, has been in the steel business 16 years. After starting with the National Tube Co. as a chemist at McKeesport, Pa., he became associated with the Pennsylvania Steel Co. at Steelton, Pa., in the frog and switch department. Later he was transferred to the sales department in Chicago. When the company was absorbed by the Bethlehem Steel Co. he remained as assistant sales manager in Chicago. In 1924 he was appointed district sales manager in Cincinnati in which position he served until his transfer to Chicago as district sales manager. He has been succeeded in Cincinnati by James G. Foote, who has been associated with the Philadelphia office of the Bethlehem company for some years.

S. A. Dinsmore, for several years district sales manager at Chicago for the Standard Gauge Steel Co., Beaver Falls, Pa., has been transferred to the Chicago office of the Union Drawn Steel Co. in the Tribune Tower. The Standard Gauge company recently was merged with the Union Drawn Steel Co.

B. E. Lindstrom now is in charge of the Chicago office of the Barber-Greene Co., Aurora, Ill., succeeding the late George R. Bascom, with whom he was associated for the past five years. Mr. Lindstrom has been a member of the Barber-Greene organization since 1918. Harold R. Haase, a member of the Chicago organization since 1920, will be associated with Mr. Lindstrom.

M. A. Weidmayer, formerly branch manager for Black & Decker at the Detroit office, is now associated with the United States Electrical Tool Co. in charge of its Philadelphia office.

C. H. Scaffe, who was connected with the St. Louis office of Black & Decker, is now associated with the United States Electrical Tool Co. as special representative operating from the general office at Cincinnati.

Harold Bates has joined the sales department of the Bridgeport Brass Co., Bridgeport, Conn., and will be engaged with matters related to sales organization and research. He has had considerable experience in sales and engineering work. After serving in various capacities with public utilities, mainly with the Boston Elevated Railway, he assumed charge of new construction projects in Connecticut and Massachusetts for the electric traction interests then controlled by the New York, New Haven & Hartford Railroad Co. Later he pursued lines of scientific study in railroad operation. From this field, Mr. Bates went with the Winchester Repeating Arms Co., helping in its sales program, and for five years he served successively as sales engineer in charge of the development of new products, superintendent of the sales engineering department, supervisor of sales planning and later he had charge of special and jobbing sales of all new products.

John Vickers, Bridgeport, Conn., has been made superintendent of the Bristol Brass Corporation, Bristol, Conn. For many years he was associated with the Bridgeport Brass Co.

E. W. Bersler, who for many years represented the Hendey Machine Co., Torrington, Conn., in the New England machine tool trade, has severed his connection with the company to engage in private business.

F. W. Jaeger, of New York, who acts as export trade advisor for a number of prominent American machine tool builders, sailed on the Leviathan Aug. 15 for a six-weeks trip. He will visit principal points on the Continent.

George Noltein, of Moscow, Russia, oil expert, has been employed by the Foos Gas Engine Co. He was engineer for a large oil engine company in Russia and is familiar with Diesel engines, which are being made at the Foos plant.

C. H. Hunt, chief engineer Weirton Steel Co., Weirton, W. Va., is on a European tour, during which he will inspect seamless tube installations. The Weirton company, as announced some time ago, will build a tube mill at Weirton, but a decision as to whether it will be a lapweld or seamless unit has not been announced.

James W. Whatley, for the past two years general sales manager of the De Bardeleben Coal Corporation, and for 21 years in the sales department of the Tennessee Coal, Iron & Railroad Co., has resigned. No announcement is made as to his future course. He is on vacation now in Florida.

H. J. Volz, for the past nine years identified with the Chicago office of Warner & Swasey, has been appointed sales representative in central Illinois, with headquarters at Peoria, for the E. L. Essley Machinery Co., Chicago.

E. E. Silk, district sales manager at Chicago for the Morgan Engineering Co., Alliance, Ohio, has resigned and has gone to Florida to take care of his properties there.

Charles E. Pynchon has resigned as machinery department manager of Joseph T. Ryerson & Son, Inc., Chicago, to engage in other work. He had been associated with the Ryerson organization for the past 18 years. He has not announced his plans for the future.

Joseph L. Scholl, for many years in the machine tool selling field, and during the past three years with Reliance Machinery Sales Co., Pittsburgh, has resigned to enter the service of the Laughlin-Barney Machinery

Co., of the same city. He succeeds J. M. Hill who recently resigned to enter another line of business in Florida.

James W. Sederquist has accepted a position with the Union Twist Drill Co., Athol, Mass., as special representative.

Harry Z. Callender has been appointed vice-president in charge of sales for the Whitman & Barnes Mfg. Co., Akron, Ohio, manufacturer of twist drills and reamers. He joined the company in 1895 as an office clerk at Cincinnati. After serving 16 years as traveling representative, he was transferred in 1918 to the Akron office, where he assisted in the reorganization of the sales department, made necessary by the war. He has acted as assistant sales manager since August, 1924.

Sir Arthur Balfour, president Balfour Steel Co., Sheffield, England, will address the Cleveland Engineering Society and Associated Technical Societies of Cleveland Sept. 2 on the invitation of the Cleveland Section of the American Society for Steel Treating. Previous to the meeting a dinner will be served. It was announced previously that he would visit Cleveland early in August but the date of the meeting was changed.

J. D. Waddell, president Waddell Steel Co., Niles, Pa., sheet-making interest, has been elected president of the Niles Chamber of Commerce.

D. Fairfax Bush, chairman, and Arthur A. Fowler, president, of Rogers, Brown & Crocker Brothers, Inc., New York, returned from a European trip this week.

W. S. Pilling, Philadelphia pig iron merchant, sailed last Saturday on the Rotterdam for Europe. He was accompanied by Mrs. Pilling. They will return about Oct. 1.

James G. Foote has been appointed acting district sales agent in Cincinnati for the Bethlehem Steel Corporation, succeeding John F. Hennessy, who was transferred to the Chicago office, where he succeeded E. E. Goodwillie, who is now steel sales representative for Bethlehem on the Pacific Coast. Mr. Foote for many years has been a general salesman in the Philadelphia office of the Bethlehem company, and prior to that was with the Pennsylvania Steel Co., which was absorbed by the Bethlehem company.

J. Fred Johnson, who has been connected with the sales department of the Bethlehem Steel Corporation in Philadelphia, has been transferred to the New York office, where he will have charge of sales of sheets and tin plate.

Final disposition has been made in the United States Circuit Court of Appeals for the Second Circuit, in the patent infringement case of the Elyria Iron & Steel Co., Cleveland, against the Mohegan Tube Co., et al., Brooklyn, N. Y. The court held that the plaintiff's two "Johnston" patents, Nos. 1,388,434 and 1,435,306, were valid and that they had been infringed. The first mentioned patent covers a method of electrically butt welding steel tubing and the other covers the welded product. The finding of the appellate court confirms the decree given in the fall of 1924 in the United States Court of the Eastern District of New York.

Car loadings in 1925 continue higher than for any previous year, if the aggregate number from the first of the year be considered. During the first 31 weeks of this year the total was 29,228,525, compared with 28,979,703 in the corresponding weeks of 1923, which furnished the previous high record. Last year the number was 27,655,674. Recent weeks of 1925 have been lower than the corresponding weeks of 1923, except for that ended Aug. 1 which, with 1,043,063 cars, was higher than in 1923, with 1,033,466 cars.

## OBITUARY

CHARLES H. KINGSBURY, formerly associated with Niles-Bement-Pond Co., died suddenly Aug. 7, aged 62 years, at Quincy, Mass. He was a native of Portsmouth, N. H. After graduating from the schools of that city he went to work for the Blood Locomotive Works, Manchester, N. H., where he became a machinist. He became Boston representative of the Niles-Bement-Pond Co. in 1897, but retired from business in 1910 because of poor health. He enjoyed a wide acquaintance among New England machine tool men.

ROBERT M. BURTON, president American Laundry Machinery Co., died at his summer home at Wianno, Mass., on Aug. 10. He was born in Cincinnati 61 years ago, attended a private school at Concord, N. H., and as a young man became affiliated with the laundry machinery business, in which he was active for 31 years.

JAMES H. CHANNON, president James H. Channon Mfg. Co., manufacturer of contractors' and railroad supplies, Chicago, died at his summer home at Grand Haven, Mich., Aug. 11, following an attack of pneumonia. Mr. Channon was born in Chicago in 1866.

FRANK CASSELL, first vice-president and director of sales Belknap Hardware & Mfg. Co., Louisville, Ky., died in that city Aug. 12. He was born in Atkins, Va., in 1872, was educated at Roanoke College, Roanoke, Va., and entered the hardware business at Radford, Va. Twenty-one years ago he started as salesman with the Belknap company, becoming sales manager in 1908 and vice-president and director of sales in 1924. For several years he was chairman of the speakers' committee of the Louisville Boosters' Club and he was a member of numerous other clubs. His widow, two sons and a daughter survive him.

WILLIAM G. ROSE, of the Sharon Fire Brick Co., Sharon, Pa., died Aug. 5.

## July Improvement in Steel Jobbing Trade

In a letter under date of Aug. 13 to the members of the Iron, Steel and Heavy Hardware Association, the secretary, Arthur H. Chamberlain, New York, finds improvement in the situation which was not in evidence when similar comment went to the membership in the early summer. The letter says in part:

"An effort has been made to keep in close touch with trade conditions throughout the country in hope of reflecting to you as promptly as possible any distinct change in the outlook. From correspondence and reports received, it is no longer possible to doubt that the jobbing and warehouse trade has enjoyed considerable improvement during the last few weeks, which promises to continue into the fall season."

"Midsummer dullness is proverbial, but with most of our members July shows a gratifying increase in volume, and some representative houses report it the best month of the year. With others, only one or two months have made a better showing. This demonstrates large consumption and points to satisfactory and perhaps increasing activity during the balance of the year."

"Mill prices show greater stability, but it must be recognized that tonnage to be placed is hardly large enough to test the market. Prompt shipments and unprecedented freight service discourage forward buying and probably will prevent an upturn in prices. Foreign steel is a factor of growing importance, but as yet it is not favored by many distributors of high standing who enjoy an established trade. If, however, domestic mills are given the preference, it is emphatically demanded that they reciprocate by not interfering with legitimate warehouse business."

## "Standards" Metallurgical Research

(Continued from page 465)

the experimental foundry for the bureau shops and the Coast and Geodetic Survey, and the melting and drawing into wire of platinum and its alloys, purified by the chemistry division. The platinum thermocouples, resistance thermometers, etc., required by the bureau are made at the bureau, and are of superior quality. Subsidiary research problems occur in connection with these projects especially in regard to refractories in which platinum can be melted without contamination.

### Specifications—1½ Per Cent

Representatives of the division serve on various metallurgical committees of the Federal Specifications Board, which evolves specifications for Government purchases. The technical secretaryship of the Metals Committee is handled by the division. In cooperation with the National Association of Purchasing Agents, tentative specifications for iron and steel scrap were adopted at a conference held at the bureau early in 1925.<sup>‡</sup> Considerable work on methods of testing zinc-coated sheets has been done for the F. S. B., and a study of the permissible limits of some impurities in fusible boiler plugs, of which 360 were tested at the bureau for the Steamboat Inspection Service in the last year, is in progress, the copper content being the chief object of study.

There is probably little doubt that these general activities are justified. There is, however, always room for argument as to the choice of research projects, of which over 50, including definite sub-divisions of the larger problems, were active in the past fiscal year. The more important of these will be discussed in a subsequent article.

### A Difference of Opinion

Criticism of the research work might be made from either of two divergent points of view. There are many subjects of metallurgical importance on which work by an impartial laboratory, interested in scientific facts only, rather than in the sale of a given product, would be useful to the metallurgical industries. Many industries with metallurgical problems will, however, find no work of value in solving those particular problems going on at the Bureau of Standards.

On the other hand, criticism could even more justly be made on the ground that too many projects are in hand, when it is remembered that the metallurgical division has less than a score of men of full professional grade to handle these problems.

Obviously, both criticisms could be met by increasing the scope of the work to cover all legitimate requests for the extension of bureau activities and, at the same time, increasing the staff to such an extent that all the projects could be followed intensively. No such solution is in sight. Economy in all governmental activities has been accomplished by a general cutting down of personnel and funds. The most important functions of each governmental branch or office will survive because the public will call for their retention, or their replacement if temporarily suspended. The less useful functions will be abandoned, and very properly so. Every line of work in a Government laboratory today requires justification on its own merits, no matter how long it may have been engaged in.

New projects, especially when of such magnitude that they would force the abandonment, or delay, of worthy projects already in hand, require even more complete justification.

Some problems, not susceptible to economical attack in a laboratory not connected with a plant, can far better be handled by private firms. Others can at least as readily be handled by a plant laboratory, and will be so handled by the industry if requests that the Government do the work are not granted. Many are of too limited or local scope or application to deserve attention by the Government, and some require equipment or personnel that would be too costly.

There remain, however, problems of general and

<sup>‡</sup>See THE IRON AGE, Jan. 8 and 15, pages 137 and 198; June 4 and 11, pages 1627 and 1743.

fundamental interest which can best be handled by the sort of equipment and staff available at the bureau, or in which the impartial point of view of a Government laboratory is essential. To select only those problems and, of those, such as will be of the greatest use to the public for the smallest expenditure of funds, is no slight task. In this task, the advice of the metallurgical industry is sought. It is to bring forth such advice that this article, and another to follow which will show the scope of the research work in some detail, are published.

(To be concluded)

## British Iron and Steel Output Low

LONDON, ENGLAND, Aug. 17 (By Cable).—The pig iron output in July was 492,700 gross tons, compared with 510,300 tons in June. It is the lowest for the year. The July steel production was slightly higher than in June at 590,400 tons. Both are still less than the 1924 monthly average.

Comparative production figures for the British steel industry in gross tons per month are as follows:

	Pig Iron	Steel Ingots and Castings
1913, per month.....	855,000	639,000
1920, per month.....	669,500	755,600
1921, per month.....	217,600	302,100
1922, per month.....	408,300	486,000
1923, per month.....	619,800	707,400
1924, per month.....	609,900	685,100
January, 1925.....	569,400	605,100
February .....	534,100	646,400
March .....	607,900	684,700
April .....	569,800	597,600
May .....	568,000	651,600
June .....	510,300	585,400
July .....	492,700	590,400

## Record Portland Cement Output

July production of Portland cement, as reported by the Bureau of Mines, was 15,641,000 bbl., the largest total yet reported for any month. The highest previous figure was that for May, with 15,503,000 bbl. June stands third with 15,387,000 bbl. The only other month passing 15,000,000 bbl. was August, 1924, when the total was 15,128,000 bbl.

Production for the seven months of 1925 has totaled 88,483,000 bbl., which is a considerable increase over the previous high record of 80,816,000 bbl. for the corresponding period of 1924.

## Large Hydraulic Turbines Ordered

Among important contracts lately secured by the William Cramp & Sons Ship & Engine Building Co., Philadelphia (hydraulic department), are included one turbine of 45,000 hp. for the Alabama Power Co., which will be the highest powered turbine in the Southern states; four of 18,000 hp. each for the West Virginia Power & Transmission Co., one of 10,000 hp. for the Rumford Falls Power Co., Rumford, Me. Two 40,000-hp. impulse turbines, the largest of this type in the world, will be installed in Brazil by the Pelton Water Wheel Co., San Francisco, a subsidiary of the Cramp company. Another subsidiary, the Dominion Engineering Works, Ltd., Montreal, will install three units aggregating 25,800 hp. in British Columbia, and two 10,000-hp. units for the Shawinigan Engineering Co.

Mechanical stokers sold by 13 establishments are reported by the Department of Commerce for July at 147, of an aggregate of 58,719 hp., compared with 128 in June of 44,095 hp., and with 115 in July, 1924, of 37,759 hp. With the exception of March, 1925, which showed 71,099 hp., the latest figure is the highest since February, 1924.

The American Steel & Wire Co. is actively dismantling the old Emma blast furnace and will put the resulting scrap through its own furnaces. The stack was built in 1872 and was last active in January, 1921.

## Iron Hottest at Middle of Cast (Continued from page 467)

changes is shown in the rapid decrease in tuyere and slag temperatures after the 11:30 a. m. cast. The slag on these three flushes was cold, black and viscous.

During this period the operation was accompanied with a movement of some material off from the bosh of the furnace. This could be noticed passing the

*Table III—Comparison of Hearth Temperatures According to Various Practices, Including One Southern Furnace*

Temperature, Deg. Cent.		Differ-		Differ-	
		Tuyeres	Slag	Metal	Tuyeres
1 Pig iron <sup>a</sup>	1711	1509	202	1466	33
2 Pig iron <sup>b</sup>	1708	1526	182	1472	54
3 Foundry iron	1748	1553	195	1493	60
4 Bessemer iron	1733	1513	220	1466	47
5 Basic iron	1669	1522	147	1468	54
6 Charcoal <sup>c</sup>	1669	1451	218	1415	36
7 Manganese alloy <sup>d</sup>	1573	1427	146	1389	38
8 Spiegelisen	1597	1427	170	1392	35
9 Ferromanganese	1550	1426	124	1386	40
10 Experimental furnace	1647	1529	118	1396	123
11 Southern furnace (foundry)	1534	1409	125	1385	24

<sup>a</sup> Average of 20 furnaces. Royster, P. H., and Joseph, T. L., "Pyrometry in Blast Furnace Work"; American Institute of Mining and Metallurgical Engineers, volume on Pyrometry, 1920. Also see *Blast Furnace and Steel Plant*, vol. 7, 1919, pages 556-560.

<sup>b</sup> Mean of 43 furnaces. Items 3, 4 and 5 divide the furnaces according to the grade of iron made.

<sup>c</sup> Joseph, T. L., "Effect of Sulphur on the Blast Furnace," presented at February, 1925, meeting of American Institute of Mining and Metallurgical Engineers, New York.

<sup>d</sup> Weld, C. M., and others, "Manganese: Uses, Preparation, Mining Costs, Manufacture of Ferroalloys"; Bulletin 173, Bureau of Mines, 1920, page 141.

tuyeres. There were a few small "slips," and the furnace had a tendency to "blow through." After 3:30 p. m. there was a decrease in top temperature and a slight increase in blast temperature. The temperature of the 5:30 p. m. cast was normal, but was high in sulphur (0.080 per cent).

The change in hearth temperature is typical of furnace plants, and especially this one, where the amount and temperature of the air blown is dependent upon

<sup>f</sup> Work cited.

*Table IV—Variation of Metal Temperature During Cast*

Metal Temperature, <sup>a</sup> Deg. Cent.

Cast No. 1	Cast No. 1	Cast No. 1	Remarks
Oct. 5	Sept. 25	Sept. 26	
1,390	1,421	1,421	First part of cast.
1,390	1,427	1,427	
1,353	1,442	1,421	
1,396	1,430	1,421	
1,400	1,440	1,427	
1,390	1,415	1,424	
1,428	1,424		
1,395	1,435	1,422	Average first third of cast.
1,438	1,435	1,442	Second part of cast just after slag appeared at the iron notch.
1,438	1,454	1,442	
1,434	1,462	1,415	
1,434	1,450	1,430	
1,428	1,445	1,430	
1,426	1,440	1,454	
1,424	1,445	1,465	
1,438	1,440	1,454	
1,434	1,465	1,442	
1,426	1,442	1,442	
1,415	1,423	1,442	
1,415	1,442	1,442	
1,432	1,448	1,443	Average second third of cast.
1,426	1,433	1,415	
1,434	1,440	1,421	
1,434	1,450	1,444	
1,394	1,450	1,423	
1,382	1,437	1,437	
1,390	1,440	1,437	
1,387	1,450	1,424	
1,390	1,423	1,433	
1,408	1,442	1,428	Average third third of cast.
1,415	1,442	1,431	Average of total cast.

<sup>a</sup> Metal analysis given in Table I.

*Table VI—Comparison of Results of Effect of Blast Temperature On Hearth Temperature With Various Practices*

Where Investigated	Increase in Blast Temperature, Deg. Cent.	Increase in Temperature per Degree
Southern furnace	0	+0.28
Experimental furnace	0	-0.00
Group of industrial furnaces	0	-0.00

<sup>\*</sup> Decrease.

the quality of top gas and the steam pressure which can be derived from the boiler plant. On this particular day the steam pressure fell, which caused a change in blast temperature and the resultant effect on the tuyere, slag and metal temperatures.

## Application of Work of Royster and Joseph to Results Obtained from Southern Furnace

In their work on pyrometry in the blast furnace Royster and Joseph† have set down a number of em-

*Table V.—Results of Temperature Observations on Metal, Slag and Tuyere During an 8-Hr. Period*

Source	Time	Observed Temperatures, Deg. Cent.*			Remarks
		Maxi-	Mini-	Aver-	
Tuyere	9:00	1,522	1,422	1,446	
Tuyere	9:20	1,483	1,437		
Tuyere	9:25	1,483	1,503	1,493	
Flush	9:30	1,473	1,488	1,467	Slag white and fluid.
Flush	9:34	1,473	1,408	1,467	End of flush not in average.
Tuyere	9:35	1,496	1,496		
Tuyere	10:04	1,455	1,455		
Tuyere	10:05	1,507	1,483	1,486	
Tuyere	10:12	1,496	1,496		
Tuyere	10:13	1,453	1,455	1,479	
Tuyere	10:25	1,456	1,437	1,455	
Tuyere	10:30	1,503	1,470	1,487	
Tuyere	10:33	1,510	1,510		
Flush	10:47	1,420	1,403	1,412	
Tuyere	10:47	1,496	1,496		
Flush	10:57	1,546	1,503	1,518	
Tuyere	11:01	1,496	1,496		
Tuyere	11:03	1,391	1,415	1,403	Slag fluid and white.
Metal	11:04	1,597	1,545	1,567	Just after flush.
Tuyere	11:28	1,438	1,358	1,415	Average of 30 readings.
Tuyere	11:38	1,624	1,535	1,563	Nearing end of cast, blast slackened.
Tuyere	11:39	1,332	1,327	1,332	Blast off.
Tuyere	11:44	1,418	1,418		Blast on; pressure 4 lb.
Tuyere	11:47	1,483	1,483		Blast on; pressure 4 lb.
Tuyere	11:48	1,503	1,503		Coke before tuyere not moving. Blast pressure 6 lb.
Tuyere	11:49	1,572	1,572		Coke before tuyere not moving. Blast pressure 12 lb.
Tuyere	11:50	1,556	1,556		Coke before tuyere not moving. Blast pressure 13 lb.
Tuyere	11:52	1,496	1,496		Coke before tuyere not moving. Blast pressure 13½ lb.
Tuyere	11:53	1,449	1,449		Coke before tuyere moving violently. Blast pressure 14½ lb.
Flush	11:46	1,360	1,343	1,351	Coke before tuyere moving violently. Blast pressure 14½ lb.
Tuyere	11:47	1,342	1,311	1,322	
Tuyere	11:50	1,229	1,279	1,266	
Tuyere	11:53	1,270	1,270		
Tuyere	11:54	1,270	1,270	1,282	
Tuyere	12:00	1,429	1,296	1,405	
Tuyere	12:42	1,577	1,449	1,518	
Tuyere	12:52	1,396	1,363	1,384	
Tuyere	1:21	1,505	1,385	1,454	
Tuyere	1:28	1,311	1,311		
Tuyere	1:41	1,510	1,319	1,419	
Flush	1:46	1,360	1,343	1,351	Slag black and viscous.
Tuyere	1:47	1,342	1,311	1,322	
Tuyere	1:50	1,229	1,279	1,266	
Tuyere	1:53	1,270	1,270		
Tuyere	1:54	1,270	1,270	1,282	
Tuyere	1:56	1,429	1,296	1,405	
Tuyere	2:00	1,412	1,412		
Tuyere	2:05	1,374	1,311	1,345	
Tuyere	2:08	1,333	1,333	1,358	
Tuyere	2:16	1,373	1,333	1,350	
Tuyere	2:18	1,333	1,333	1,317	
Flush	2:22	1,321	1,321		
Tuyere	2:28	1,485	1,462	1,428	Slag black and viscous.
Tuyere	2:34	1,410	1,381	1,394	Flushing.
Tuyere	2:46	1,270	1,229	1,258	Furnace driving fast; temperature high; tendency to blow through.
Tuyere	2:53	1,304	1,236	1,264	
Tuyere	3:10	1,254	1,224	1,229	
Flush	3:22	1,271	1,246	1,258	
Tuyere	5:00	1,421	1,394	1,394	Slag black and viscous.
Metal	5:00	1,421	1,394	1,394	5 p. m. cast.

\*25 deg. added to observed maximum and to average, as a correction factor for tuyere.

pirical equations which they show can be used for the calculation of silicon in the metal, and the determination of metal temperatures without pyrometric measurement. Application of these equations to the results obtained from this furnace give results for the calculation of silicon which are considerably lower than the results by analysis. The application of the Royster-Joseph equation to these data for obtaining the temperature of the metal gives results much higher than those observed.

The empirical equations devised by Royster and Joseph were developed from data, most of which were taken at furnaces operating according to northern practice. The fact that the results from this furnace do not follow may be due to a difference in northern and southern practice. However, the results from one furnace in the South cannot be advanced as conclusive evidence against the results from a group in the North. It might be of value to make a study of hearth temperatures in southern furnaces.

#### Summary and Conclusions

1. It has been shown for this southern furnace that hearth temperatures are much lower than those reported for furnaces in northern practice.

2. The temperature of the slag remains constant with an increase of blast temperature; this is in agreement with Johnson's "free-running" theorem. The trend of tuyere temperature in relation to increasing blast temperature is indefinite—the data would indicate that there is a slight increase, 0.15 deg. per degree increase in blast temperature. Metal temperatures increase 0.28 deg. per degree increase in blast temperature.

3. The silicon content of the metal increases with metal temperature.

4. The metal temperature at the middle of a cast has an average increase of 24 deg. Cent. above the temperature of the metal at the beginning of the cast, and is 13 deg. Cent. higher than the average temperature of the cast.

5. Application of empirical equations of Royster and Joseph for determination of metal temperatures and silicon content of metal show results for the former which are too high and results for the latter which are too low, in comparison with actual observations. It is possible that these equations cannot be applied to Southern practice, owing to the difference in operation in this district.

## NON-CORRODIBLE STEELS

### British Exhibit of Some of the Principal Types— Stainless and Silicon Steels

At the 250th anniversary of the founding of the Royal Observatory, Greenwich, held in London, July 23, numerous alloys of iron and other elements possessing new and interesting properties were exhibited. They were prepared by Sir Robert Hadfield and included non-corrodible and non-scaling steels. A description of the principal ones follows:

As illustrating the potentialities of manganese steel, photomicrographs and specimens in both the unstrained and strained conditions were shown. The deformation causes extraordinary increase in hardness. This property of "deformation hardness" is possessed by no other metal to such a high degree; it accounts for its remarkable resistance to wear, and also explains why it is so difficult to be machined.

#### Magnetic and Non-Magnetic Steels

Other specimens of manganese steel and nickel steel showed alloys in both magnetic and non-magnetic conditions in the same bar. In the case of the former it is quite non-magnetic, but by heat treatment it can be rendered magnetic. In the case of the latter it is rendered magnetic by exposure to a temperature below 0 deg. C.

Specimens of iron-nickel-chromium alloys were shown for demonstrating their non-scaling qualities compared with mild steel. These alloys are resistant to scaling at temperatures up to 1000 deg. C. even in oxidizing flames.

A section was devoted to non-corrodible steels, and included specimens of iron-nickel-chromium alloys demonstrating their resistance to corrosion from various causes in comparison with a series commencing with wrought iron and including 12 per cent chromium steel.

Other specimens illustrating further the nature of the progress of researches on corrosion included: (1) The protection of iron and steel by special coatings; (2) pure ingot iron (99.85 per cent) made in the basic open-hearth furnace; (3) copper steel, and (4) non-rusting chromium steel.

#### Stainless Steels

The non-rusting chromium steels represent a distinct advance in the direction of obtaining non-corrodible steel, but have not proved a complete solution of the problem on account of the fact that their non-corrodible qualities are dependent upon heat treatment, and the preparation of a smooth surface. A marked advance on this steel is obtained in the special alloys of non-

corrodible steels ("Hecla/A.T.V." and "Era/A.T.V."), which are highly resistant to a large range of corroding agencies, including the atmosphere, both at ordinary and high temperatures up to a red heat. They do not depend for their qualities upon heat treatment or special preparation of their surfaces.

The use of "Hecla/A.T.V." steels for turbine blades was shown as demonstrating that it can be brazed without deteriorating its non-corrodible properties. On opening up turbines, nickel steel, and even high-chromium steel, known as stainless, have been found to be so badly affected by corrosion that the working efficiency of the turbine was considerably reduced.

Of historic interest was a facsimile model constructed in non-corrodible steel of the famous iron pillar of Delhi (erected about A. D. 300), together with iron chippings from the original pillar. A feature of this remarkable pillar is the resistance it has offered to atmospheric corrosion extending over a period of 16 centuries.

#### Silicon Steel Like Pure Iron

The properties of silicon steel were demonstrated by X-ray spectrograms of silicon steel and pure iron. The examination, which was carried out by Prof. K. Honda, indicated that the crystalline structure of silicon steel is indistinguishable from that of pure iron. In addition, the lattice constant is of closely the same dimensions, namely, 2.860 Angström units for the silicon steel, compared with 2.864 for the specimen of pure iron. It is evident, therefore, that the remarkable magnetic properties of silicon steel are not the result of any special crystalline formation, but that they reside in the individual atoms. In the case of silicon steel it is not yet clear in what way the presence of silicon atoms is able to modify so advantageously the magnetic properties of the iron atoms.

## Recording Smoke Detector

An electrical instrument to be attached to power boilers, to give immediate warning of smoke, has been developed by the Engineering Corporation, Long Beach, Cal. The instrument consists of an element inserted in the boiler flue, which is essentially two plates between which the flue gases pass. These plates are in the primary circuit of a transformer; in the secondary circuit is the sensitive indicating and recording unit, a graphic instrument of the switchboard type. The conductance between the plates increases as the density of the smoke passing between them, causing a flow of charging current which is indicated and recorded. The instrument is known as the Kingsbury recording smoke detector. Patents have been applied for.

## NEW TRADE PUBLICATIONS

**Pumping Machinery.**—Pennsylvania Pump & Compressor Co., Easton, Pa. Three bulletins, Nos. 122, 123 and 124, describing and illustrating various types of pumps and air compressors made by this company.

**Leather Belting.**—The Chicago Belting Co., 113-125 North Green Street, Chicago. Six illustrated circulars entitled "Chicago Belting Pre-tested Leather Belts in Steel Mill; for the Machine Shop; in Cement Plants; in Saw Mills; in Paper and Pulp Mills; and in the Mining Industry, Quarries and Brick Plants. Six to ten pages each. 8½ x 4 in.

**Oxyacetylene Process.**—Air Reduction Sales Co., New York. A 20-page, small-sized booklet entitled "Answers to Questions About the Oxyacetylene Process." It is intended to supply in convenient pocket form some of the information often requested of this company regarding the principles of the oxyacetylene process, oxygen, care of oxygen cylinders, acetylene, care of acetylene cylinders, equipment, welding and cutting.

**Enamels and Enameling Equipment.**—Ferro Enamel Supply Co., Cleveland. A booklet of 72 pages and cover, illustrated, showing the line of enamel in equipment, materials and supplies handled by this company, which makes a specialty of installations of complete enamel plants.

**Wire Guards for Machinery.**—Buffalo Wire Works Co., Buffalo. Catalog No. 9, 24 pages with cover, illustrated, showing Buffalo wire mesh screens for protecting all sorts of machine operations.

**Extension Rails.**—The Midland Steel Products Co., Cleveland. A 4-page illustrated circular showing the Tompkins extension rails for coal mines.

**Factory Heating System.**—Skinner Brothers Mfg. Co., St. Louis. Catalog of 32 pages devoted to the heating and ventilating of mills, plants and shops of every description, in accordance with the Baetz patent. This covers a steam-coil heater in connection with a fan and operates on the plenum system, forcing air into the space to be heated, at pre-determined points. Many instances of use are given, with numerous illustrations. One of the most prominent is the United States naval hangar at Lakehurst, N. J., where the two great dirigibles are housed.

**Electrical Equipment.**—The Westinghouse Electric & Mfg. Co. is distributing its new 1925-27 catalog of electrical supplies. The catalog presents a complete representation of the apparatus manufactured by the Westinghouse company, or obtainable through its district offices or agent jobbers, and gives detailed information on electrical supplies. The publication, which contains 1200 pages and is profusely illustrated with 4500 engravings, lists all new apparatus designed and manufactured in the past two years, as well as all the previous established types. A brief description of the company's industrial motors and controllers, power and marine equipment, large switchboards and oil circuit breakers, and railway supplies also is included. Four indexes for the convenience of the user have been included in the catalog. A very complete subject index in the front of the book is printed on blue paper so that it can be quickly located, and a style number index for checking invoices is located in the back of the book. A classified index under such group headings as central stations, electric railways, industrial plants, mines, etc., gives a complete list of apparatus applicable to each of these groups of industries, and a thumb index enables the user to locate any section of the catalog with the least inconvenience.

**Locks and Door Hardware.**—Sargent & Greenleaf, Rochester, N. Y. Catalog No. 16, giving lists, dimensional description and clear illustrations of locks and lavatory and door hardware for a wide variety of uses. Size, 128 pages, 6 x 9 in.

**Polyphase Motors.**—Century Electric Co., St. Louis. Bulletin No. 38, devoted to squirrel cage induction polyphase motors, ½ to 75 hp. type SC. Constituent parts are described and illustrated and the system of lubrication and exclusion of dirt from housings are explained. Size, 16 pages, 7 x 10 in.

**Fuel Oil Pumping, Heating and Straining.**—Charles F. Ames & Co., 90 West Street, New York. Circular of Fig. No. 105, lettered diagram with table of the Ames unit system of oil regulation in oil burning installations, showing arrangement, with equipment attached, ready for shipment.

**Automatic Controllers.**—C. J. Tagliabue Mfg. Co., 188 Thirty-third Street, Brooklyn, N. Y. Revised, enlarged edition of the company's catalog on automatic controllers for temperature, pressure, humidity, condensation and other factors. A new section, fully illustrated, stresses the importance of automatic control in various industries. Size 84 pages.

**Air Heater.**—Combustion Engineering Corporation, Broad Street, New York. Catalog AH-2 devoted to the C-E air heater, tells of economies derived from using the heat wasted in flue gases to pre-heat boiler furnace air. Details of construction, operation, and performance are shown by word and picture. Savings claimed for the equipment are indicated by chart and diagram. A section touches on the various applications of the heater. Size, 14 pages, 8 x 11 in.

**Automatic Scales.**—Toledo Scale Co., Toledo, Ohio. Circular entitled "Invisible Losses," stresses the importance of measuring materials by weight or by count and shows how errors may be avoided by automatic, visible weighing. Being the first of a series of circulars dealing with conditions in plants as found by a study being made of methods in various industries. Illustrated. Size, 9 x 16 in., four pages.

**Turbine Blower.**—L. J. Wing Mfg. Co., 352 West Thirteenth Street, New York. Bulletin 77 of 32 pages, describing turbine and motor-driven blowers as applied to boilers, both with and without stokers. Instructions for installation are given, together with data from which the selection of the type and size may be made. Tabular and diagrammatic information in the bulletin, including dimensions and clearances, make it valuable for reference.

**Speed Recording Instruments.**—The Esterline-Angus Co., Indianapolis. Bulletin 725, describing with illustrations the company's recording and indicating instruments, together with notes on installation and operation. Four pages, 8½ x 10 in.

**Heating Apparatus.**—F. J. Ryan & Co., Wesley Building, Philadelphia. Loose-leaf folder of 21 sheets, 8 x 11 in., with illustrations, being part of a list which, when completed, will consist of 60 sheets covering the requirements of industrial heating. The folder outlines problems, present and past, and demonstrates in what manner the company has adapted its equipment to meet needs. Details of installation and operation are given, together with clear-cut illustrations.

**Swedish Steel.**—Edgar T. Ward's Sons Co., Newark, N. J. Stock list on Swedish spring, saw, sinker and cold rolled Swedish steel. Size, 8 pages, 8½ x 11 in.

**Building Blocks.**—Brecko Concrete Products Co., Nashville, Tenn. Bulletin of 16 pages, 8 x 11 in., describing and illustrating the manufacture and uses of the company's products, special emphasis being given to its adaptability to partition walls.

**Safety Guards.**—Buffalo Wire Works Co., Inc., 290-332 Terrace, Buffalo. Catalog No. 9, illustrating and describing Buffalo machine, belt and safety guards. Illustrations include a wide variety of types of guards.

**Gas Pumps.**—The Connersville Blower Co., Connersville, Ind. Bulletin 13C, showing the application of Victor rotary positive gas pumps to industries utilizing gases for various purposes. The features of this line of small gas pumps are stressed and a list of standard sizes given. Size, four pages, 8½ x 11 in.

**Die Heads, Collapsible Taps and Threading Machines.**—Landis Machine Co., Inc., Waynesboro, Pa. Booklet illustrating the use of the company's Land-Matic, rotary and stationary die heads in railroad and other shops, also the use of the Victor stationary collapsible tap. Actual applications of several threading machines are included.

**Heating.**—American Blower Co., Detroit. Booklet of 16 pages showing the broad application of the Venturafin method of heating, the units of which are said to have more than five times the effectiveness of direct radiation, one-tenth the weight and use one-fourth the space. Size, 8½ x 11 in.

"Electric welding was invented in 1886. When are you going to adopt it?" are keynote sentences prominent on the front cover of *A. E. F. Welding Illustrated*, a new monthly paper published by the American Electric Fusion Corporation, 2610 Diversey Avenue, Chicago. The first issue is made up of four pages and the printing is on light cardboard. The picture on the cover, a smith working at his anvil, with an insert of a girl operating an electric welding machine, is done attractively in colors. One page is devoted to an illustrated exposition of the principle of electric spot, butt and seam welding, the other pages containing material describing the profit on investment in the company's spot welders.

# Machinery Markets and News of the Works

## LARGE FOREIGN ORDER

### Cincinnati Machine Tool Builder to Furnish 80 Lathes to Fiat Plant

#### Chicago, Milwaukee & St. Paul Railroad Placing Orders for \$200,000 List of Machines

FOR the second time within seven months the Fiat Motor Co. of Italy has placed a large machine tool order in this country, the latest order, awarded to a Cincinnati company, calling for about 80 engine lathes.

Sales of machine tools so far this month have been better than many had expected and pending inquiries indicate a good business in the near future.

The Chicago, Milwaukee & St. Paul is in the midst of purchases which will total about \$200,000 for tools and allied equipment. Other railroad buying is in fair proportions. The Burlington has closed for two car wheelbarrows and its subsidiary, the Fort Worth & Denver City, has bought two bolt cutters.

The International Motor Co., Plainfield, N. J., has placed a large order for special production machines, but otherwise buying in the East has been confined to small lots.

The barometric figure of the National Machine Tool Builders' Association for new orders is 38.3 for July, showing a sustaining of the rate of machine tool buying, the corresponding figures for June and May being 39.7 and 38.29, respectively.

## New York

NEW YORK, Aug. 18.

A LARGE purchase by the International Motor Co., Plainfield, N. J., of special production machinery was the principal transaction of the past week in the machine tool trade. General buying begins to pick up a little, and for August is fairly satisfactory. The Havana Central Railroad has bought a 96-in., 600-ton wheel press from the Niles-Bement-Pond Co. The Pullman Car & Mfg. Corporation, Pullman, Ill., bought a 48-in., 500-ton wheel press. The Hallidie Machinery Co., Seattle, Wash., has ordered a 600-lb. steam hammer. The Bridgeport Brass Co., Bridgeport, Conn., has bought tool room equipment.

The Segal Mfg. Co., 100 Nott Avenue, Long Island City, N. Y., has plans for a two-story addition, 40 x 100 ft., to cost about \$35,000. John Baker, 9 Jackson Avenue, is architect.

L. R. Wilson, 296 Broadway, New York, is in the market for a 3-ton gasoline locomotive, Plymouth type, 24-in. gage.

The Alloys & Products Co., 1448 West Farms Road, New York, has awarded a contract to Niewenhous Brothers, P. G. Stadler, architect, 316 East 161st Street, for a one-story foundry, 96 x 160 ft., to cost about \$65,000.

The Radio Pack Co., 59 Pearl Street, New York, has been acquired by E. H. Cluett, vice-president Cluett, Peabody & Co., Troy, N. Y., and associates. A stock issue is planned of \$525,000, part to be used for enlargement in plant and additional equipment.

Murray Klein, 39 Graham Avenue, Brooklyn, architect, has plans in preparation for a two-story automobile repair shop and garage, 100 x 105 ft., estimated to cost \$80,000, with equipment.

The Ingersoll-Rand Co. will build an addition to its plant at Painted Post, N. Y., for the manufacture of a direct-control gas compressor.

The DeLorme Tool & Mfg. Corporation, 46 Spring Street, Newark, N. J., recently incorporated, will manufacture dies, tools, molds and special machines; also small articles on a contract basis. Its requirements include steel, brass and aluminum. A. C. DeLorme is president.

The Truxton Insulation Co., 50 Spring Street, Newark, N. J., has been organized to manufacture Bakelite sheets, rods and tubes. Operation has been started. Edward L. Tippel is one of the heads.

The Universal Screw Driver Co., 577 Jackson Avenue, Jersey City, N. J., has been organized to manufacture screw-drivers which will be made under contract. No awards have been made to date.

The Arrowhead Iron & Steel Works, recently organized, will take over the Arrow Iron Works, 84 Verona Street, Brooklyn, producer of light structural steel and ornamental iron work. Expansion is planned.

The Koppers Seaboard Coke Co., Union Street and the Gowanus Canal, Brooklyn, has let a contract to the Rust Engineering Co., 30 Church Street, New York, for a one and two-story shop and scale house, with coal storage and distributing building. Murphy & Lehman, 159 Remsen Street, Brooklyn, are architects.

The Port of New York Authority, 11 Broadway, New York, plans to install freight-handling machinery in connection with the proposed establishment of nine freight distributing terminals in lower Manhattan. Cost is reported to exceed \$6,000,000.

The Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until Aug. 25, for railroad track material for the Brooklyn navy yard, schedule 4201.

The Astoria Light, Heat & Power Co., 130 East Fifteenth Street, New York, has awarded a contract to the Eastern Construction Co., 101 Park Avenue, for a one-story addition to its repair shop, 76 x 90 ft., at Astoria, L. I.

Plans are under way for plant enlargements for extensive increase in production by the Servel Corporation, 17 East Forty-second Street, New York, maker of refrigerating equipment.

The Samro Garage, 1440 Broadway, New York, has awarded a general contract to Rubin Bernson, 161 East 110th Street, for a two-story garage and shop, 100 x 100 ft., to cost about \$70,000.

The Board of Education, City Hall, Newark, N. J., will install manual training equipment in the new three-story high school being built at an estimated cost of \$850,000.

The Avon Sheet Metal Works, 361 Jelliff Avenue, Newark, N. J., has acquired property adjoining its plant, and plans the erection of an addition. Abraham Kolter heads the company.

A machine and repair shop will be installed in the three-story building, 75 x 100 ft., to be erected at Newark, N. J., by the Newark Milk & Cream Co., 26 Bridge Street, estimated to cost \$50,000, for which a contract was let to Fred Kilgus, Inc., 13 South Sixth Street.

The De Cozen Motor Co., South Broad and Miller Streets, Newark, N. J., local representative for the Chrysler automobile, will begin work on a one-story addition to its repair and storage building of about 30,000 sq. ft., to cost in excess of \$100,000 with equipment. Frank Grad, 1023 Broad Street, is architect.

The B. Katchen Iron Works, 107 Hunterdon Street, Newark, N. J., has purchased property in Irvington, N. J., 100 x 105 ft., for a new structural steel and ornamental iron works, for which plans will be drawn at once.

The A. W. Wheaton Brass Works, 110 Walnut Street, Newark, N. J., has filed plans for a one-story addition, to cost about \$14,000.

Sears, Roebuck & Co., Arthington Street and Homan Avenue, Chicago, have closed with officials at Newark, N. J., for a 50-year lease of a tract of land at Port Newark, totaling about 38 acres. It plans to erect a five-story plant to manufacture portable houses, to give employment to 500 men. Estimated cost, \$500,000. A second unit will be built later.

Ovens, power equipment, conveying apparatus, etc., will be installed in the one-story baking plant to be erected by the New York Pie Baking Co., Avenue A, Newark, N. J., to cost about \$70,000, for which a building contract has been let to the John W. Ferguson Co., 152 Market Street, Paterson, N. J.

The Jersey Central Power & Light Co., Allenhurst, N. J., will begin construction on a central repair shop and garage at Long Branch, N. J., for company cars and motor trucks, to cost about \$45,000.

Fire, Aug. 13, destroyed part of a building at the plant of the Flintkote Co., East Rutherford, N. J., manufacturer of roofing products. Loss was reported at \$25,000, including machinery. It is planned to rebuild. Headquarters of the company are at 31 St. James Avenue, Boston.

The Two River Corporation, Bloomfield, N. J., recently formed with capital of \$50,000, to manufacture tools, has filed plans to build a one-story plant to cost about \$25,000. The company is headed by Walter Kidde and Walter H. Freygang.

The Lackawanna Laundry Co., 1268 Summit Avenue, Jersey City, N. J., has plans for a one-story automobile repair shop and garage, 82 x 165 ft., estimated to cost \$50,000, with equipment. Neil J. Convery, 964 Broad Street, Newark, N. J., is architect.

## New England

BOSTON, Aug. 17.

THE slight improvement in the machine tool business noted a week ago is maintained, with this difference—houses previously reporting sales did comparatively little the past week, while those previously inactive have taken on business. Current business, however, is by no means active. It is still confined to single machines. Sales include a Universal boring machine to a Worcester, Mass., shop, a consolidated press to a Somerville, Mass., plant, a sizable shear to a Connecticut firm, a 14-in. lathe to a Massachusetts firm, three used planers to a Syracuse house, and a used 10 x 36-in. Norton grinder to a Boston dealer, who resold, and possibly 10 or 12 tools of less importance to as many buyers. Contrasted with markets outside New England, business here is of little importance, but the fact that buyers have begun buying is regarded with great favor in local machine tool circles.

An inquiry for a 75-ton crane by Stone & Webster, Boston, for a plant is the outstanding feature of the crane market.

Hill, Clarke & Co., Boston, have purchased the entire metal working equipment, including approximately 50 high grade tools, of the Ensign Co., Faneuil District, Boston, tabulating machinery.

Contract has been awarded for a two-story and basement truck garage on Prince and Commercial Streets, Boston, for a large repair department, to cost about \$500,000, by the North Terminal Corporation, 30 Kilby Street, Boston.

Bids close next Aug. 24 on a one-story, 154 x 200 ft., ice manufacturing plant planned by the Boston Ice Co., 110 State Street, Boston, for which conveying and other equipment is required. C. Leslie Weir, 41 East Forty-second Street, New York, is the engineer.

The S. M. Howes Co., maker of stoves, has awarded a contract for a manufacturing and assembling plant to cost \$100,000 at 509 Medford Street, Boston. Fay, Spofford & Thorndike, 200 Devonshire Street, Boston, are the engineers.

A permit has been granted the Acme Smelting Co., 413 Second Street, Chelsea, Mass., to erect a one-story, 50 x 100 ft. foundry. Scheine & Levine, 508 Pemberton Building, Boston, are the architects.

The Norfolk Woodworking Co., Braintree, Mass., plans to erect a one-story, 140 x 260 ft. mill, a boiler plant and other units at Quincy, Mass. L. S. Joslin, 339 Newbury Street, Boston, is the architect.

The Board of Education, Littleton, N. H., is considering the installation of manual training equipment in its proposed new high school, estimated to cost \$165,000, for which foundations soon will be laid. Larson & Wells, Hanover, N. H., are architects.

The Fafnir Bearing Co., Booth Street, New Britain, Conn., manufacturer of bearings, plans an addition to cost about \$150,000 with equipment.

The Gloucester Electric Co., Gloucester, Mass., plans a two-story addition to its power house, 50 x 50 ft. Charles T. Main, 200 Devonshire Street, Boston, is engineer.

The Patent Button Co., Abbott Avenue, Waterbury, Conn., manufacturer of metal snap buttons, etc., has awarded a general contract to the Barney-Ahlers Construction Co., 110 West Fortieth Street, New York, for its proposed five-story addition, 60 x 174 ft., to cost close to \$300,000 with equipment. Westcott & Mapes, New Haven, Conn., are the engineers.

A power house and laundry to cost about \$45,000, will be built by the Winchester Hospital, Winchester, Mass.

Prescott's Bus Line, Commercial and Foster Streets, Worcester, Mass., will erect a repair shop and garage at Rutland, Mass., said to cost \$40,000.

The Norton Co., Worcester, Mass., reports a satisfactory increase in its volume of manufacturing, including both the wheel and machine departments. The company has 2600 men on its payroll, which, in spite of the usual slackening of the summer season, is 300 greater than last January. The machine division has orders on its books to keep the shops running full to Jan. 1 under present schedules of operation, which is a very great change from last year's experience. However, with the added capacity of war time, the company could increase production by adding to its working forces. The demand for grinding machines and grinding wheels comes from an increasingly diversified trade, it is stated.

The New England Power Co., Worcester, Mass., has asked a permit to erect a one-story addition to its plant at 39 Harvard Street, estimated to cost \$45,000.

## Chicago

CHICAGO, Aug. 17.

THE Chicago, Milwaukee & St. Paul is in the middle of purchases against its outstanding list. This road, which for several years has been buying used equipment, is now placing orders largely for new tools. Its appropriation for machine tools and related equipment amounts to \$200,000. The Burlington has closed for two car wheel borers, and for its subsidiary, the Fort Worth & Denver City, it has placed two bolt cutters with a Denver machine tool house. The Santa Fe still has some tools to buy and during the week placed an order for a shaper. The Illinois Central has issued an inquiry for a universal grinding machine. Industrial buying has been adversely affected by the vacation season, but prospects for orders later on are said to be bright. The General Electric Co. has closed for five engine lathes for its Fort Wayne, Ind., plant. The Chicago Board of Education at a meeting, Aug. 12, finally approved purchases of equipment for the Carl Schurz High School, amounting to approximately \$30,000. The Mather Stock Car Co., Chicago, is inquiring for an 8-ft. squaring shear, with capacity to cut 16-gage and lighter materials. The machine is for shipment to Chicago Ridge, Ill. An Ohio manufacturer of gas engines has bought a used horizontal boring, drilling and milling machine from a local dealer.

The American Can Co. has acquired an additional Chicago plant through the purchase from the Central Bag Mfg. Co. of property at 6001-33 South, Western Avenue. There is immediately available more than 150,000 sq. ft. of floor space, with three and a half acres of vacant ground for expansion. The acquisition will provide the American Can Co. with its fourth plant in the Chicago district, and the fifty-first in its chain of factories covering the United States and colonial possessions.

The Transo Envelope Co., 3512 North Kimball Avenue, Chicago, has awarded a contract for a one-story factory building, 65 x 239 ft., to cost \$50,000.

Ostrander-Seymour & Co., manufacturers of printers' plate-making machinery for photoengraving, 7 South Dearborn Street, Chicago, has awarded a contract for a one- and two-story factory with 30,000 sq. ft. area at Cicero, Ill.

C. E. Dobbins & Co., heavy hardware manufacturer, recently was incorporated with capital stock of \$1,000,000, having elected Charles E. Dobbins, the founder, president; Harold N. Dobbins, vice-president, and Edward F. Kaul, secretary. The company plans an elaborate expansion program. It is letting contract for a large plant of concrete and steel construction to be erected at Gary, Ind. Executive offices will remain at 326 River Street, Chicago.

Fire recently damaged the core room of the National Sewing Machine Co., Belvidere, Ill. The loss was not great.

The Chicago, Milwaukee & St. Paul Railway plans to re-

## The Crane Market

**I**NQUIRY in the locomotive and overhead crane fields is still light, but sellers are working on a fair volume of business that developed last month. Pending inquiries include a number of cranes for railroads, principally in the overhead field. The Long Island Railroad has not yet closed on the list of six 1-ton and one 2-ton single I-beam hand power cranes. Dwight P. Robinson & Co., New York, have been accepting bids on two 25-ton, 3-motor overhead cranes for the Wabash. The 35-ton gantry and 10-ton overhead for the Lehigh Valley have not yet closed and the two cranes for the Pennsylvania Railroad are still open, although recommendations are understood to have been made. The Chesapeake & Ohio Railroad has awarded a general contract for a shop at Huntington, W. Va., to Joseph E. Nelson & Sons, Chicago. The crane equipment includes a 50-ton, 87-ft. 5½-in. span, 6-motor crane, two 15-ton, 46-ft. 6½-in. span, 3-motor cranes. Plans for a one-story addition to the plant of the Ajax Iron Works, Corry, Pa., are understood to include a crane and runway.

Among recent purchases are:

Boston & Maine Railroad, Boston, three 25-ton locomotive cranes from the Industrial Works and a standard dumper from the American Hoist & Derrick Co.

Warren Brothers, Boston, a 10-ton crawl tread locomotive crane from the American Hoist & Derrick Co.

Stone & Webster, Boston, a 25-ton locomotive crane from the Industrial Works.

Curtin Brothers, Little Ferry, N. J., a 22½-ton locomotive crane with 1½-cu. yd. bucket from the Industrial Works.

Victor Iron & Supply Co., 1743 Carter Avenue, New York, a 5-ton, 47-ft. 6-in. span, 3-motor, overhead traveling crane from the Northern Engineering Works.

Chesapeake & Ohio, a 200-ton transfer table for Richmond, Va., from the Whiting Corporation.

Chicago, Burlington & Quincy, a 5-ton, 3-motor, gantry crane for Creston, Iowa, through Page & Ludwick, Chicago, from the Milwaukee Electric Crane & Mfg. Co.

McClintic-Marshall Co., Pittsburgh, a 10-ton, 80-ft. span, 10-ton, 84-ft. span, 20-ton, 84-ft. span and 15-ton, 80-ft. span cranes, for its Pottstown plant, from a Milwaukee builder.

Indiana Service Corporation, Fort Wayne, Ind., a 25-ton, 37-ft. span crane from an unnamed builder.

Atlantic Coast Line Railroad, a 5-ton, 66-ft. span crane from an Eastern builder.

build the south section of its roundhouse at North Riverside near Sioux City, Iowa, which was recently damaged by fire.

The Indianapolis Pump & Tube Co., Columbus, Ind., will erect a plant 100 x 200 ft.

The Lindell Forge & Machine Co., Lansing, Mich., has completed the foundation for a machine shop. The superstructure is under way.

Hyde Brothers, Elkader, Iowa, have started the construction of a machine shop, 40 x 65 ft.

The Wabash Railway has awarded a contract for a steel car repair shop at Decatur, Ill., to cost \$350,000.

John Obrechts Sons Mfg. Co., manufacturer of wagon wheel hubs, Tell City, Ind., is reconstructing its plant, recently damaged by fire.

The Hinderliter Tool & Supply Co., Tulsa, Okla., has bought a site in Blackwell, Okla., for a machine shop to manufacture oil well tools, and a warehouse to store oil well supplies.

The City Council, Grand Island, Neb., has tentative plans for improvements in the municipal electric light and ice plants, and waterworks, estimated to cost \$700,000, with machinery. The Pillsbury Engineering Co., Minneapolis, Minn., is engineer.

Fire, Aug. 10, destroyed part of the cabinet works, J. A. Johnson Co., 830 North Wells Street, Chicago, with loss estimated at \$50,000, including equipment. It is planned to rebuild.

The Red River Valley Power Co., Crookston, Minn., plans extensions and improvements in its hydroelectric power station No. 1, including the installation of additional equipment, estimated to cost about \$50,000. Roy Croswell, Minneapolis, is engineer.

The Board of Education, Waverly, Iowa, plans to install manual training equipment at its proposed three-story high school, estimated to cost \$160,000, for which foundations soon will be laid. H. B. Burr, Commercial Bank Building, Waterloo, Iowa, is architect.

The Davis Auto Heater Co., Onawa, Iowa, has been organized to manufacture an automobile heater. It plans to do its own manufacturing. George W. Prichard is secretary-treasurer.

The Federal Ice & Refrigerating Co., 142nd Street and Halsted Avenue, Chicago, soon will ask bids for a one-story ice-manufacturing plant at Kankakee, Ill., to cost about \$275,000, with machinery. Charles C. Coneby is chief engineer and architect of the parent organization, City Ice & Fuel Co., 6611 Euclid Avenue, Cleveland.

The Great Western Sugar Co., Sugar Building, Denver, has acquired property at Ovid, Colo., as site for a beet sugar refinery to cost about \$1,000,000. The project will include a machine shop and power house.

The Consolidated Power & Light Co., Rapid City, S. D., is disposing of a note issue of \$1,900,000, a portion of the proceeds to be used for improvements in power plants and system.

The Cannon River Hydro-Electric Co., Cannon Falls, Minn., is perfecting plans for the early construction of a hydroelectric generating plant to cost about \$250,000 with machinery. The Brahtz Engineering Co., Builders' Exchange Building, St. Paul, Minn., is engineer.

The Standard Oil Co. of Indiana, Mason City, Iowa, has awarded a contract to M. M. Moen & Co., local, for a storage and distributing plant of several buildings, estimated to cost \$100,000. The project includes a one-story machine shop. Schlinz & Bailey, Monadnock Building, Chicago, are engineers.

## St. Louis

ST. LOUIS, Aug. 17.

THE Burns & McDonnell Engineering Co., Interstate Building, Kansas City, Mo., has been engaged by the Missouri Hydro-Electric Power Co. to prepare plans for a hydroelectric generating plant near Bagnell, Mo. Work will start in the fall. It plans to develop 100,000 hp. Estimated cost is \$10,000,000, with transmission system.

The Board of Education, Ninth and Locust Streets, Kansas City, Mo., plans to install manual training equipment in its proposed high school, five-story and basement, estimated to cost \$500,000, for which bids are being asked on general contract until Sept. 3. C. A. Smith, Finance Building, is architect.

The Kansas City Malleable Iron & Steel Casting Co., Kansas City, Mo., has been organized to consolidate the Kansas City Malleable Iron Co. and the Fairfax Iron & Steel Co. Plans are under advisement for expansion.

The Union Electric Light & Power Co., St. Louis, has plans under way for extensions in its electric power plant at Cape Girardeau, Mo., to include the installation of a new turbo-generator and accessory equipment, estimated to cost \$100,000.

Ovens, power equipment, conveying and other equipment will be installed in the two and three-story baking plant addition, 150 x 190 ft., to be erected by the Campbell Baking Co., Thirtieth Street and Troost Avenue, Kansas City, Mo., estimated to cost \$430,000. William Clifford is general manager.

Fire, Aug. 7, razed the auxiliary power plant of the St. Louis Car Co., St. Louis. Rebuilding plans are under advisement.

The Butler Hill Motor Co., 812 Minnesota Avenue, Kansas City, Kan., has completed plans for a one-story and basement repair shop and garage, 62 x 135 ft., estimated to cost \$60,000, with equipment. J. G. Bracklein, Kresge Building, is architect.

The City Council, Okeene, Okla., plans to install a motor-driven tripleplex pump and auxiliary equipment in connection with proposed improvements in the municipal waterworks. V. V. Long & Co., Oklahoma City, Okla., are engineers.

The Arkansas Fertilizer Co., Little Rock, Ark., has plans nearing completion for a new unit at its plant, estimated to cost \$70,000, of which amount about \$50,000 will be expended for new machinery.

The Oklahoma Natural Gas Co., 1606 South Newport Street, Tulsa, Okla., has arranged a fund of about \$2,000,000 for proposed extensions, including a new pipe line in the Cromwell district, with compressor stations. R. C. Sharp is vice-president.

Ovens, power equipment, conveying machinery, etc., will be installed in the three-story and basement baking plant, 173 x 225 ft., to be erected by the J. C. Patterson Corporation, 3110 Gillham Road, Kansas City, Mo., estimated to cost \$160,000. McKernie & Trask, Board of Trade Building, are architects.

The Common Council, Altus, Okla., plans to install pumping machinery in connection with a proposed municipal waterworks. The Benham Engineering Co., Gumbel Building, Kansas City, Mo., will make surveys at once.

The Northern New Mexico Power Co., Santa Fe, N. M., recently incorporated, will build a large centrally located power plant to supply electricity to Santa Fe, Albuquerque and cities within a radius of 100 miles. Incorporators include W. C. Thornburg and M. D. Bowman, Toledo, Ohio, and William A. Bayer, Santa Fe.

The Columbia Iron Works, St. Louis, has been incorporated with capital of \$6,000 to operate as indicated.

The Saint Louis Auto Rim Lock Co., 5380 Southwest Avenue, St. Louis, has been incorporated with \$50,000 capital stock, to engage in manufacturing and attaching automobile rims.

## Milwaukee

MILWAUKEE, Aug. 17.

**D**EVELOPMENTS in the machine tool market indicate that there is some good business in the foreground. The character of orders being booked by local foundries and machine shops, while not of a volume to demand much increase in capacity, calls for improved production facilities, and replacement business is already assuming a degree of real activity. Workers employed in local industries at the beginning of August was nearly 7000 greater than a year ago. Nearly 600 were added in the last month and employment officials say current calls come mainly from metal trades shops. Skilled machinists are in demand but few are available.

The Menasha, Wis., Common Council asks bids until Sept. 1 for a Diesel oil engine of 600 to 1000-hp., and one 500 kw., 4000-v. generator set, complete, for the city water and light plant. With the addition to the power house, the cost is about \$75,000. J. F. DeCaro is city clerk.

The Mid-West Steel Products Co., Burlington, Wis., incorporated with capital of 500 shares of common stock, will manufacture steel ladders, fixtures and other pressed steel specialties. Provision has been made for quarters and equipment is being purchased. The principals are G. Carl Kuehthau, S. B. Anderson, E. A. Busacker.

The Commonwealth Sash & Door Co., Stoughton, Wis., is being organized with \$250,000 capital stock to manufacture patented doors for large apartment houses; also standard sash, doors and interior trim. Complete contract for equipment was placed with the P. B. Yates Machine Co., Beloit, Wis.

The Huebsch Mfg. Co., 368 Brady Street, Milwaukee, maker of laundry equipment and supplies, plans the construction of a shop, 60 x 120 and 30 x 40 ft., two stories and part basement to cost about \$80,000. William O. Huebsch is secretary and general manager.

The Milwaukee Board of School Directors, Tenth and Prairie Streets, Milwaukee, will close bids Aug. 27 for the complete construction and equipment of a shaving and dust collecting system in wood shop "B"; also for alterations in the systems in wood shop "A" and the pattern shop of the Boys' Technical High School. Frank M. Harbach is secretary.

The Empire Electric Mfg. Co., Beaver Dam, Wis., has been incorporated to manufacture electrical specialties. Capital stock consists of \$60,000 preferred shares and 1200 common shares. Principals are Joseph W. Deniger and M. A. Jacobs of Beaver Dam, and J. H. Gugler, Globe Electric Co., Milwaukee. Manufacturing space will be leased, and considerable new equipment purchased.

The South Side Malleable Casting Co., Fourteenth and Windlake Avenues, Milwaukee, has contracted with W. W. Oeflein, Inc., general contractor, 86 Michigan Street, local,

to construct a foundry addition, 177 x 186 ft., to replace several smaller, obsolete structures and to enlarge capacity at a cost of about \$150,000. This is the first step in new construction which eventually will comprise a complete plant replacement. A. W. Hoffmann is engineer in charge. Walter W. Lange is president.

The Kwick-Mix Concrete Mixer Co., 126 Milwaukee Street, Port Washington, Wis., will transfer its foundry department from Fredonia, Wis., to the main shop, and will erect a new building, 40 x 146 ft., one story, the contract being let to Joseph Ubbink & Sons, local. About \$30,000 will be invested in building and equipment.

The Milwaukee Electric Railway & Light Co., 217 Sycamore Street, Milwaukee, will convert the terminal and car barns on Kinnickinnic Avenue into a garage and service station for its subsidiary, the Wisconsin Motor Bus Lines. Cost is estimated at \$125,000 and plans call for considerable new equipment. General contract was let to Arthur W. Riesen, 961 North Water Street, local.

The Prescott Pump Jack Co., Prescott, Wis., is a new corporation with capital stock of \$15,000, organized by L. E. Jones and associates to manufacture pump jacks and accessory equipment for pumps. Production is to begin about Sept. 1.

The Allis-Chalmers Mfg. Co., Milwaukee, has taken the contract to install 25 main line oil pumps, costing \$750,000, for the Ozark Pipe Line Corporation, St. Louis, operating a 600-mi., 10-in. pipe line. Each will be of the horizontal plunger type driven by a 270 hp., horizontal three-cylinder Diesel engine.

The Standard Sheet Metal Works, 1485 Thirty-eighth Street, Milwaukee, manufacturer of portable sheet metal structures, has let a general contract to Byrne Brothers, 3112 Burleigh Street, to build a one-story factory addition, 75 x 120 ft., costing about \$35,000.

The Madison Buick Co., 210 East Washington Street, Madison, Wis., distributor of Buick cars, will rebuild its garage, recently gutted by fire, at a cost of about \$95,000. Contract was let to J. H. Findorff & Son, 601 West Wilson Street, local.

The Pick Mfg. Co., West Bend, Wis., incorporated with 1000 shares, no-par stock, will manufacture automotive units and parts. Principals are George Paull, G. L. Grow and Samuel Pick. A building was leased and equipment is being installed.

The Northern Paper Mills Co., Green Bay, Wis., has acquired a water power site at White Rapids, Mich., and plans to construct a hydroelectric generating plant developing 16,000 hp. Estimated cost is \$950,000. It will use the exclusive output of the first unit of 8000 hp. to be built presently. Judson G. Rosebush is president.

The Wisconsin Electric Power Co., subsidiary of Milwaukee Electric Railway & Light Co., which is adding another 30,000 kw. unit to its steam generating plant at St. Francis, has contracted with the International Combustion Engineering Co., New York, for complete installation for low temperature distillation of coal with a capacity of 210 tons daily. It will be the first installation in America.

The Eureka Dish Washing Machine Co., Milwaukee, incorporated with \$10,000 capital stock, will lease factory space to manufacture electrically operated kitchen equipment. Principals are William J. Cary, county clerk; C. M. Hambricht and Nicholas Reukema.

The Columbia County Highway Commission, Portage, Wis., closes bids Aug. 20 for the erection of a machine shop, 40 x 80 ft., as an addition to the general warehouse and service building for highway construction and maintenance equipment. Equipment will be purchased later. J. T. Henton is commissioner.

The Consolidated Steam Specialty Co., Milwaukee, has been incorporated to manufacture a complete line of vacuum and vapor heating specialties. F. L. Hutchinson is one of the heads.

## Buffalo

BUFFALO, Aug. 17.

**T**HIE Buffalo Wire Works Co., 320 Terrace Street, Buffalo, has acquired adjoining property with about 30,000 sq. ft. of floor area for expansion. The site was occupied by the Jones Iron Works, which will move to the Buffalo Pitts Building, Efner Street, where facilities will be provided for larger production.

An electric traveling crane and other machinery will be installed in the proposed freight terminal to be built by the Delaware, Lackawanna & Western Railroad Co., at Buffalo. Plans will be prepared at once. Headquarters are at 90 West Street, New York.

The Clifford General Repair Shop, 175 Genesee Street, Buffalo, plans a two-story addition to its repair shop and

garage on Michigan Avenue, 91 x 135 ft., reported to cost about \$50,000, with equipment. A. H. Hopkins, 447 Main Street, is architect.

The Regal Paper Co., Pulaski, N. Y., has completed plans for a one-story addition, 140 x 160 ft.

The City Council, Buffalo, is considering the purchase of close to 200 acres of land for the establishment of an air field, to include the construction of hangars and repair shops. Cost will be about \$200,000.

The Rochester Gas & Electric Corporation, Rochester, N. Y., has engaged the J. G. White Engineering Corporation, 43 Exchange Place, New York, to install a special heat conversion plant at its gas-generating station, estimated to cost \$250,000. J. P. Haftenkamp is general superintendent.

The Morrison Veneer Co., 35 Steele Street, Jamestown, N. Y., has plans nearly complete for a new one-story plant, 60 x 160 ft., at Saranac Lake, N. Y., to cost about \$37,000. Beck & Tinkham, Phillips Building, Jamestown, are architects.

The Willsea Works, Rochester, N. Y., maker of cement block machinery, has purchased the former heat treating building of the Symington-Anderson gun plant at 1044 University Avenue, that city, which will be used as a foundry and machine shop. The building was constructed by the Government during the war. The Willsea Works recently sold its foundry on Brown Race, Rochester, necessitating a new location.

The Huntley Mfg. Co., Silver Creek, N. Y., manufacturer of grain cleaning machinery, acquired at bankrupt sale the plant of the Paul Delaney Co., Brocton, N. Y., and soon will move its equipment to the new plant. New equipment will be required.

The Preston Power Co., Sodus Center, N. Y., recently organized, has acquired the Empire Mills, local, and will establish an auxiliary power plant to be operated in connection with the Sodus Gas & Electric Co. The new plant will cost \$40,000, exclusive of equipment, which will include transformers, generators, etc.

## Cincinnati

CINCINNATI, Aug. 17.

**A**n order for approximately 80 lathes placed by the Fiat Motor Co., Italy, with a local builder has been the outstanding feature of the machine tool market. This is the second time in seven months that this manufacturer has made a large purchase here. Sales of machine tool builders during the first half of August have been better than many executives had anticipated. Buying of school equipment has opened up to some extent. The automotive industry still offers a fertile field, while railroad purchases are numerous. Pending inquiries indicate a good business in the immediate future.

Many lathe manufacturers are busier than they have been at any time this year. Railroad orders have made this pick-up possible, although automotive companies have been a good source for bookings. A Michigan manufacturer has placed an order locally for several crankshaft lathes. The John Steptoe Co. has sold a 16-in. lathe for export to Mexico. The Wabash Railroad, St. Louis, will close for five lathes within a few days. This carrier has four shapers on its list. Shaper builders are encouraged at the inflow of orders. The Cincinnati Shaper Co. has booked a 16-in. shaper from the Board of Education, Chicago, and another from the Board of Education, Memphis, Tenn. The John Steptoe Co. has sold a 16-in. shaper to the Woodlawn, Pa. public schools, and a 14-in. shaper to a Charlotte, N. C. concern. Ohio University, Athens, Ohio, bought a milling machine from this company. The Canadian General Electric Co., Toronto, Canada, has ordered a large steel press brake from the Cincinnati Shaper Co. Inquiries for planers are brisk. The Cincinnati Planer Co. has disposed of a 72-in. planer to the Marion Steam Shovel Co., Marion, Ohio. Sales of boring mills have been fairly active and have been well distributed throughout the general industrial field. Demand for drills is improved. The Hope Forge & Machine Co., Mount Vernon, Ohio, has ordered a 6-ft. radial drill from the Niles-Bement-Pond Co. The latter also booked a 96-in., 400-ton wheel press from the Hubbard Steel Foundry Co., East Chicago.

The Safe Cabinet Co., Marietta, Ohio, is planning a four-story addition, 80 x 700 ft., to manufacture steel safes, filing cabinets, etc. It will cost about \$700,000 with equipment. Schenck & Williams, Mutual Home Building, Dayton, Ohio, are architects.

The Monroe Falls Paper Co., Monroe Falls, Ohio, considers rebuilding the part of its plant destroyed by fire,

Aug. 6, with loss estimated at \$100,000 including machinery.

Plans are filed by the Eureka Tool & Die Co., St. Clair Street, Dayton, Ohio, for a one-story and basement addition to cost about \$35,000.

The Lenoir Car Works, Lenoir City, Tenn., has let contracts to the Converse Bridge & Steel Co., Chattanooga, Tenn., for a one-story steel fabricating shop and car erecting building, 125 x 800 ft., to replace the portion of its plant recently razed by fire with loss of about \$400,000. New machinery will be installed.

The Standard Chemical Products Co., Memphis, Tenn., is considering plans to rebuild the part of its works recently destroyed by fire at a loss of about \$25,000 with equipment.

The Chesapeake & Ohio Railroad Co., Richmond, Va., has foundations nearly complete for a locomotive and car shop at Russell, Ky. It will proceed with superstructures at once. A one-story power plant will be built. The complete plant will cost about \$250,000. C. W. Johns is chief engineer.

The Hiner Structural Steel Co., Canton, Ohio, headed by Guy C. Hiner, has negotiated the purchase of the Louisville Sheet & Steel Co. plant, Louisville, Ohio, bankrupt. The works, idle about three years, will be improved and placed in service soon, giving employment to about 250 operatives.

The Andres Stone & Marble Co., 2455 East Fifth Avenue, Knoxville, Tenn., plans to erect a stone cutting and polishing plant to replace part of its works recently destroyed by fire with loss estimated at \$75,000 including equipment. H. Victor Hart is president.

The Ohio Oil Co., Findlay, Ohio, has acquired property at Dayton, N. M., and plans to construct a refining plant to handle the output in the Artesia field. The refinery is reported to cost close to \$500,000 with machinery.

The F. H. Lawwell Co., 1170 Mount Vernon Avenue, Columbus, Ohio, is planning a two-story automobile repair shop and garage, 60 x 145 ft., to cost about \$75,000.

The Trio Iron Works, 3716 West McMicken Street, Cincinnati, recently incorporated, will continue the manufacture of ornamental iron fixtures which was started in 1924. Joseph Robinson Hale, Jr., is president and Anton Wanck, secretary-treasurer.

## South Atlantic States

BALTIMORE, Aug. 17.

**T**HE consolidated Gas, Electric Light & Power Co., Lexington Building, Baltimore, is negotiating with the city for waterfront property as a site for a steam-operated electric power plant, reported to cost \$175,000.

The Flynn & Emrich Co., 305 North Holliday Street, Baltimore, manufacturer of stokers, will soon begin work on a one-story addition. W. S. Austin, Maryland Trust Building, is consulting engineer.

Fire, Aug. 5, destroyed the furniture manufacturing building at the Maryland Penitentiary, Baltimore, with loss reported at \$100,000, including equipment. It will not rebuild at the present, but machinery will be installed in other structures. Patrick J. Brady is warden.

The Taylor-Parker Co., Water Street and Commerce Place, Norfolk, Va., has inquiries out for a locomotive, 42-in. gage, with four or six drivers.

The Bainbridge Power Co., Bainbridge, Ga., has been acquired by interests headed by John B. Weakley and Eugene Fies, of the Alabama Water Co., Birmingham, Ala. The new owners have plans under consideration for extensions, including additional equipment installations.

J. C. Steele & Sons, Statesville, N. C., are inquiring for a radial drill, about 3-ft.

The Board of City Commissioners, Asheville, N. C., is considering the installation of pumping equipment in connection with proposed extensions in the municipal waterworks. Frank L. Conder is engineer.

The Virginia Railway & Power Co., Richmond, Va., recently acquired by Stone & Webster, Inc., 147 Milk Street, Boston, and associated interests, is said to have tentative plans for a series of hydroelectric generating plants with super-power transmission systems. The entire project will cost close to \$10,000,000.

Lewter F. Hobbs, Inc., Monticello Avenue, Norfolk, Va., has inquiries out for a 50-hp. horizontal return tubular boiler, to operate at 125 lb. working pressure.

H. F. Southwell, Reidville, Ga., is planning to purchase deep-well pumping machinery for city water supply service.

The Aluminum Co. of America, Oliver Building, Pittsburgh, will make extensions and improvements at its plant at Badin, N. C.

R. M. Morrison, president Citizens' Bank, Moultrie, Ga., plans to purchase lathes, shapers, planers, sanders, etc., for installation in a proposed furniture manufacturing plant.

The Victor Cotton Oil Co., Gaffney, S. C., has tentative plans for the establishment of a new local plant to manufacture fertilizer products.

The Washington Suburban Sanitary Commission, Hyattsville, Md., plans the installation of pumping machinery in connection with the proposed installation of a water and sewage system at Gaithersburg, estimated to cost \$325,000.

A machine and repair shop will be installed in the garage, 70 x 160 ft., to be erected by the Simon Automobile Co., Professional Building, Greenville, S. C., estimated to cost \$46,000.

The Peerless Woolen Mills, Inc., Rossville, Ga., will install a steam-operated electric power plant in connection with its proposed new local plant, for which plans are being drawn by W. H. Sears, James Building, Chattanooga, Tenn.

The Savannah Sugar Refining Co., Savannah Bank & Trust Co. Building, Savannah, Ga., will erect an addition, 120 x 260 ft., to its distributing plant, to cost about \$60,000, with equipment.

The Hackley Morrison Co., 1708 Lewis Street, Richmond, Va., is inquiring for a 50-hp. stationary steam engine, and accessory equipment; also a double-drum hoist, Lidgerwood type.

The L. E. Blanchard Co., P. O. Box 1107, Hendersonville, N. C., is considering the purchase of ice-making machinery.

The Southern Utilities Co., Palatka, Fla., is reported to have preliminary plans for a new steam-operated electric generating plant near Dublin, Ga., to cost about \$350,000, with machinery.

The Consolidated Coal Products Co., Fairmont, W. Va., plans an experimental briquetting and tar refining plant of brick and steel construction, to cost \$30,000, exclusive of equipment.

The Taylor-Colquitt Co., Easley, S. C., has acquired a tract of about 75 acres near Spartanburg, S. C., a site for a proposed creosoting plant, to cost \$200,000, with equipment. The installation will include two steel retorts, vacuum and compression pumps, locomotive cranes and cars, material-handling machinery, etc.

The Board of Education, Durham, N. C., plans to install manual training equipment in its new high school, estimated to cost \$130,000, for which foundations will soon be laid. Milburn, Heister & Co., First National Bank Building, are architects.

The Southern Cotton Oil Co., Gretna and Louisiana Streets, New Orleans, has acquired a plant at Chester, S. C., and plans improvements, including additional equipment.

The Claxton Ice Co., Claxton, Ga., has taken over a building which will be remodeled for a new ice-manufacturing plant. Machinery will be installed. H. E. Greenman is head.

## Pittsburgh

PITTSBURGH, Aug. 17.

THERE is a steady flow of single tool orders but group or list buying still is absent. The Jones & Laughlin Steel Corporation, which is putting up a new plant for making reinforcing bars on Second Avenue, Pittsburgh, is in the market for two bar shears. The Weirton Steel Co. is a promising prospect for equipment in connection with the expansion of its plant at Weirton, W. Va. This company will add 45 ovens to its present by-product coke plant, an 800-ton blast furnace and three open-hearth furnaces, in preparation for a pipe plant and for increasing its sheet capacity.

Plans filed by the Jones & Laughlin Steel Corporation, Pittsburgh, provide for a one-story addition to its plant, to cost about \$80,000 without equipment.

J. A. Metz, 5627 Kirkwood Street, Pittsburgh, has permission from the city to construct a one-story machine and repair shop for automobile service.

The Star Electric Co., 1013 State Street, Erie, Pa., has tentative plans under advisement for a new storage and distributing plant on Eleventh Street, near French Street, reported to cost close to \$50,000, with equipment.

M. L. Luterman, 304 Peoples Bank Building, Pittsburgh, has plans for a two-story and basement automobile service, repair and garage building, 75 x 150 ft., at 3131 Forbes Street, to cost approximately \$70,000.

The Sun Lumber Co., Weston, W. Va., has inquiries out for a 300-kw. engine-driven electric generator, 240 volts, 3 phase, 60 cycles, with engine to operate at 150 lb. steam pressure.

The Spencer Water & Ice Co., Spencer, W. Va., has plans for a new electric-operated pumping plant.

The Chesapeake & Ohio Railroad Co., Richmond, Va., will proceed with the erection of its locomotive shops at Huntington, W. Va., to cost about \$200,000, with equipment.

The Board of Education, Monongahela, Pa., plans to install manual training equipment in its new high school, to cost approximately \$175,000, for which superstructure will soon be placed in progress.

The H. M. Jackson Lumber Co., Brock's Bridge, near Clarksburg, W. Va., has tentative plans for rebuilding the portion of its plant destroyed by fire, Aug. 9, with loss estimated at \$50,000, including equipment.

## Gulf States

BIRMINGHAM, ALA., Aug. 17.

**A**N appropriation of \$2,250,000 is being arranged by the Dallas Power & Light Co., Dallas, Tex., to construct an addition to its generating plant, to be two- and four-story, 88 x 160 ft. Installations include a 20,000 kw. turbo-generator. A fund of \$500,000 has been provided also for the construction of two automatic power substations. C. W. Davis is vice-president.

The Crystal Ice Co., Clearwater, Fla., has plans under way for the construction of an ice-manufacturing plant on Drew Street to cost about \$75,000 including equipment. G. G. Springer is general manager.

The Tampa Lumber & Mfg. Co., Tampa, Fla., plans to erect a two-story mill, 75 x 420 ft. and 130 x 190 ft., for manufacturing sash, doors, etc., estimated to cost \$30,000, excluding machinery.

B. Hester, Pecos, Tex., and associates have planned a new cotton compress plant, estimated to cost \$60,000 with machinery.

The Southeastern Power & Light Co., Birmingham, Ala., is disposing of a bond issue of \$10,000,000, a portion of the proceeds to be used for extensions and improvements in power plants.

The Kilby Frog & Switch Co., Birmingham, Ala., has perfected plans to consolidate with the Wier Frog Co., Cincinnati, combined capitalization being \$2,000,000. The companies will continue to operate as individual units. Expansion of output is planned.

The Common Council, Cottontdale, Ala., is perfecting plans for the construction of a municipal power plant; also the installation of a municipal waterworks.

The Travis Automobile Co., San Antonio, Tex., has leased a new two-story building, 50 x 103 ft., to be erected by M. S. Wright, 325 Dwyer Avenue, for a repair shop and garage, estimated to cost \$50,000 with equipment.

The City Council, Iviness, Fla., plans extensions and improvements in the municipal electric lighting plant, including the installation of additional equipment. E. V. Camp & Associates, DeKalb Avenue, Atlanta, Ga., are engineers.

The Rapides Parish School Board, Alexandria, La., plans to install manual training equipment in its three-story high school, estimated to cost \$900,000, for which foundations soon will be laid. Favrot & Llavaudais, Ltd., Hibernia Bank Building, New Orleans, are architects.

The Steve Sash & Door Co., 602 Monterey Street, San Antonio, Tex., has plans for a new two-story mill, 30 x 125 ft., on Frio Street, estimated to cost \$30,000 with equipment. L. Harrington & Co., Houston Building, is engineer.

The City Council, Abilene, Tex., plans to install pumping machinery in connection with proposed extensions in the municipal waterworks, estimated to cost \$250,000.

Addison Wheeler, St. Petersburg, Fla., automobile dealer, has leased a one-story building, 200 x 200 ft., to be erected by C. M. Roser, 695 Central Avenue, for a repair shop and garage. It will cost about \$200,000 with equipment.

The Gulf Refining Co., 43 Fifth Street, S. E., Miami Beach, Fla., has made tentative plans for enlargements in its oil storage plant.

The Anniston Cordage Co., Anniston, Ala., plans to erect a one-story machine shop; also a power house.

The St. Petersburg Motors, Inc., St. Petersburg, Fla., has plans for a three-story repair shop and garage, estimated to cost \$150,000 with equipment. Headquarters are at 1815 Bayshore Boulevard, Tampa, Fla. W. F. Ferman is president.

The Commercial Natural Gas Co., Shreveport, La., has surveys in progress for the construction of a 40-mile pipe line to Tyler, Tex., with compressor stations, reported to cost \$400,000. Behn Cook is engineer in charge.

The Panama City Tar & Turpentine Co., Panama City, Fla., will make extensions in its plant, with the installation of steel retorts and other equipment, about doubling present capacity. Estimated cost, \$80,000.

The City Council, Mer Rouge, La., is considering plans for rebuilding part of the municipal electric light plant recently destroyed by fire. Additional equipment will be installed.

The Haven Breeze Ice Cream Co., Winter Haven, Fla., has tentative plans for the construction of an ice-manufacturing plant to be equipped for an initial output of about 25 tons per day. Equipment soon will be purchased.

Edgar Brothers Foundry & Machine Co., Mobile, Ala., is in the market for used pulley molding machinery, 16 to 24 in.

## Detroit

DETROIT, Aug. 17.

PLANS are being made by the Gotfredson Body Corporation, Wayne, Mich., manufacturer of automobile bodies, for a new three-story addition, reported to cost \$175,000.

The Hupp Motor Car Corporation, 3501 East Milwaukee Street, Detroit, has awarded a contract to the Everett Winters Co., Book Building, for an addition to cost \$165,000, with equipment.

The Challenge Refrigerator Co., Grand Haven, Mich., soon will begin to erect an addition to cost about \$25,000.

The City Council, Hamilton, Mich., is considering plans for the installation of an electric power plant.

The Ford Motor Co., Highland Park, Detroit, has acquired the plant of the Stout Metal Airplane Co., which will be known as the Stout Metal Airplane division of the purchaser. Tentative plans contemplate increased plant facilities for producing all-metal aircraft.

The DeFoe Boat & Motor Works, Bay City, Mich., has authorized plans for a one-story addition, 100 x 200 ft., to replace part of the plant recently destroyed by fire, with reported loss of \$75,000, including equipment.

The Michigan Crown Fender Co., Ypsilanti, Mich., is arranging for expansion and will establish departments to manufacture oil heaters, cookers, etc. The company was reorganized recently with L. T. Wilcox as head. Sale of \$250,000 in stock is planned.

C. H. Acrane, Detroit, architect, has completed plans for a four-story repair shop and garage, 100 x 100 ft., estimated to cost \$160,000, with equipment.

The Detroit Rock Salt Co., Oakwood, Detroit, plans complete electrification of its properties, and will install motor-driven equipment throughout.

The A. C. Spark Plug Co., Flint, Mich., division of the General Motors Corporation, has acquired patent rights on a pressed steel muffler, and will arrange a portion of its works for production. Additional equipment will be installed. The Gray-Hawley company will continue in operation manufacturing other products.

The Federal Drop Forge Co., Lansing, Mich., is installing additional equipment, including press, electric ovens and auxiliary apparatus. It purposed to increase output.

The Chelsea Foundry Co., Chelsea, Mich., recently incorporated, is engaged in manufacturing building hardware including bell traps, sashweights, etc. M. B. Giberson, Jr., is secretary.

## Pacific Coast

SAN FRANCISCO, Aug. 17.

CONTRACT has been awarded by the Pacific Foundry Co., Eighteenth and Harrison Streets, San Francisco, to A. H. Wilhelm, 180 Jessie Street, for a two-story pattern shop, to cost about \$24,000.

The State Highway Commission, Sacramento, Cal., has awarded a general contract to J. P. Williams, Fresno, Cal., for its one-story equipment repair and maintenance shop, estimated to cost \$30,000. Foundations will soon be laid.

The General Electric Co., 724 South Spring Street, Los Angeles, has asked bids for a three-story storage plant, 80 x 240 ft., with adjoining two-story structure, to cost about \$150,000. A traveling crane will be installed and other equipment. The Austin Co., 777 East Washington Street, is engineer.

The Richfield Oil Co., Los Angeles, has acquired a tract

of 15 acres at South San Francisco, and plans to erect a storage and distributing plant, estimated to cost \$200,000, with equipment. Construction is in charge of William H. Eaton, Douglas Building, Los Angeles.

H. W. Crozier, Cowlitz, Chehalis & Cascade Railway Co., Chehalis, Wash., and associates, have applied for permission to use water from the Cowlitz River, for a hydroelectric generating plant to develop about 16,000 hp. Estimated cost, \$1,500,000.

Fire, Aug. 6, destroyed the plant of the Colman Creosoting Works, Florida Street Viaduct, Seattle, Wash., with loss estimated at \$500,000, including equipment. It is planned to rebuild.

The Los Angeles Propeller Co., 120 West "B" Street, Wilmington, Cal., recently incorporated, is now engaged in manufacturing propellers only, but plans to expand its business. It will erect a foundry and manufacture ship supplies also. George W. Morrow is manager.

The Albina Engineering & Machine Co., 28 Albina Street, Portland, Ore., plans to erect a one-story addition, 100 x 200 ft., to replace part of the plant destroyed by fire, at a loss of \$37,000, including equipment.

B. N. Nelson, Oroville, Cal., has plans for a new box-manufacturing plant at Marysville, Cal., with a department for the production of moldings, etc. The initial unit will cost about \$30,000.

A manual training department will be installed in the new building to be erected at the Huntington Beach, Cal., high school, estimated to cost \$300,000. Allison & Allison, Hibernian Building, Los Angeles, are architects.

Herbert Fleishhacker, vice-president Great Western Power Co., 530 Bush Street, San Francisco, and associates are organizing a company to construct a plant at Pittsburg, Cal., to manufacture a track-laying device for motor-tractor service, reported to cost in excess of \$150,000, with machinery. H. C. Montgomery, formerly with the Holt Mfg. Co., Stockton, Cal., manufacturer of tractors, will be active in the new company.

The Board of City Trustees, Eureka, Cal., plans to install a pumping plant in connection with proposed extensions in the municipal waterworks. Estimated cost, \$45,000.

The Eastern Oregon Light & Power Co., Baker, Ore., has plans for building an addition to its power plant at La Grande, Ore., to be equipped as a turbine building. Charles B. Miller, La Grande, is engineer.

## Indiana

INDIANAPOLIS, Aug. 17.

THE General Parts Corporation, Flint, Mich., has leased buildings at the plant of the former Haynes Automobile Co., Kokomo, Ind., and will continue operations for the production of parts for present Haynes automobiles, giving employment to about 40 operatives. It plans to move some of its other branches to this location and to increase output.

The Irvington Products Co., Indianapolis, recently organized, will operate a plant at 5525 Bonna Avenue, to manufacture metal automobile accessories. It is headed by C. L. Hogle and R. E. Stevenson.

The Indianapolis Block Co., Indianapolis, has plans for a new plant to manufacture concrete blocks.

The Interstate Public Service Co., Wild Building, Indianapolis, has plans in progress for an automatic power substation in connection with a proposed transmission system between Knightstown and Newcastle, Ind., estimated to cost \$150,000, with equipment.

The Town Council, Clarksville, Ind., is considering the installation of pumping equipment, part of a plan to build a city waterworks to cost about \$50,000. Charles Reilly, Oak Street, New Albany, Ind., is engineer.

The Cole Motors Corporation, Indianapolis, will arrange part of its local plant to repair Dort automobiles.

Harlan B. King, Indianapolis, has leased property at 8 North Dearborn Street, where he will operate an electric repair and construction shop.

The Spenger Co., South Bend, Ind., automobile dealer, has leased a two-story building, 70 x 130 ft., to be erected by local interests, estimated to cost \$50,000, for repair shop and garage. Freyermuth & Maurer, Associates Building, are architects.

The Brazil Clay Co., Brazil, Ind., will begin immediately to rebuild a section of its plant destroyed by fire, to consist of three buildings, costing about \$80,000. Conveying and other equipment will be installed. William Zeller is president.

The Southern Railway, Chattanooga, Tenn., will commence at once an improvement program carrying an in-



**I**N Indianapolis, the Vonnegut Machinery Co. utilizes a most interesting plant for the selling of machine tools and accessories. The building is of so-called daylight construction, making it possible to view machinery under natural light and from all angles. The view is one looking toward the main entrance. On each side of this hall are the display rooms

vestment of \$2,500,000. Included in the plans are new shops to cost \$1,000,000.

Estimates of other projects call for a \$450,000 viaduct, yard improvements and a viaduct to cost \$1,100,000.

## Philadelphia

PHILADELPHIA, Aug. 17.

**C**ONTRACT has been let by the Alemite Lubricator Co. of Pennsylvania, 1523 Fairmont Avenue, Philadelphia, to John Schnabel, Inc., Denckla Building, for an addition to cost \$30,000.

The Jefferson Ice Mfg. Co., American and Cumberland Streets, Philadelphia, has acquired the ice-manufacturing plant of J. Hulton, Sr., for \$57,000, and will operate as a branch plant. Extensions are planned.

The Thornton-Fuller Automobile Co., Parkway and East Eighteenth Street, Philadelphia, has work under way on a four-story repair shop and garage, to cost about \$150,000, with equipment. Contract for building was let to the William Steele & Sons Co., 219 North Broad Street.

The Pennsylvania Laundry Co., 321 North Thirty-second Street, Philadelphia, has plans for a one-story mechanical shop, to cost about \$50,000, with equipment. William Lowenthal, 1208 Chestnut Street, is engineer.

The Philadelphia Rapid Transit Co., 810 Dauphin Street, Philadelphia, plans the construction of a one-story car repair shop on a six-acre tract, recently acquired, to be equipped for mechanical and electrical work. The company will enlarge its repair trackage and storage yards there.

The A. H. Fox Gun Co., Eighteenth Street and Wagner Avenue, Philadelphia, manufacturer of firearms, has filed plans for extensions in its plant. Installation of equipment is planned.

Himmelein & Bailey, Inc., 246 Chestnut Street, Philadelphia, manufacturer of mechanical belting, has plans under advisement for a one-story plant, 115 x 250 ft., to cost about \$100,000, with equipment. It is understood that the project will be delayed.

The Department of Public Works, City Hall, Philadelphia, plans the installation of handling and conveying machinery, pumping apparatus and other equipment in the proposed municipal incinerator plant on site to be selected, estimated to cost \$600,000.

The Ford Motor Co., Highland Park, Detroit, is completing plans for a number of buildings for its proposed assembling plant on site recently acquired at Chester, Pa., and will begin erection soon. Other existing buildings to

be used, will be remodeled and equipped. The plant will cost about \$1,000,000.

The Board of Education, Duryea, Pa., plans the installation of manual training equipment in its two-story and basement high school on Foote Avenue, estimated to cost \$250,000, for which bids have been asked.

The Camden Terminal Co., Camden, N. J., Volney Bennett, president, will install unloading and conveying machinery and other material-handling equipment, including factory trucks, etc., at its three proposed warehouses, to be located on the pier at Spruce Street. The structures will cost about \$500,000.

The City Council, Ephrata, Pa., is considering plans for enlargements in its municipal power plant to double present capacity. An appropriation for equipment will be arranged.

The Keystone Carbonic Gas Co., High Spire, Pa., is planning to purchase machinery to manufacture boxes for packing bottles.

The Hazard Mfg. Co., Wilkes-Barre, Pa., manufacturer of wire rope and cable, asks bids for its proposed addition, three-story, 100 x 180 ft., to cost about \$350,000, with machinery. McCormick & French, Second National Bank Building, are architects.

The Metropolitan Edison Co., Reading, Pa., plans the construction of a second unit at its steam-operated power plant at Middletown, Pa., to develop an additional capacity of about 30,000 kw., to cost approximately \$750,000, with transmission system.

The Board of Education, Reading, Pa., will install manual training equipment in the new senior high school to be erected at Mount Penn, estimated to cost \$1,500,000, for which foundations will be laid at once. Ritcher & Eiler, Reading, are architects.

The Central Railroad of New Jersey, 143 Liberty Street, New York, will soon begin to build its shops on a site secured at Bethlehem, Pa. Initial units are to consist of an engine terminal, machine and repair shops, etc. Later the company plans to erect a one-story addition, to be equipped as a car repair shop. The project will cost about \$500,000, with equipment.

The Atlas Mineral Products Co., Allentown, Pa., manufacturer of asbestos specialties, is working on a new addition to its plant at Mertztown, Pa., and plans to install equipment. It will replace a branch plant at Albany, N. Y., recently destroyed by fire.

The Board of Education, Summit Hill, Pa., plans to install manual training equipment in its new school to cost approximately \$200,000, for which foundations will be laid at once.

The American Car & Foundry Co., Berwick, Pa., has outlined an expansion program to include the erection of a three-story pattern shop, 120 x 180 ft.; three-story passenger car and pipe shop, 60 x 125 ft.; two-story operating and office building, 50 x 125 ft., estimated to cost \$230,000, with equipment. Part of the machinery will be removed from other plants of the company; the rest will be purchased. Headquarters are at 165 Broadway, New York.

The Federal Metal Products Co., Philadelphia, has leased space in the recently completed building at Thirteenth and Race Streets, and will equip for a new plant.

MacFadden & Co., 2202 Arch Street, Philadelphia, has been organized to manufacture electrical and mechanical devices. Operation has begun.

The J. W. Paxson Co., Luzerne and D Streets, Philadelphia, is in the market for a vertical boring mill, 6 or 8 ft.

The Commercial Truck Co., Hunting Park and Rising Sun Avenues, Philadelphia, is inquiring for a second hand jack lift truck 60 in. long, with 6-in. lift.

The Eagle Charger Corporation, 121 North Eighth Street, Philadelphia, has been organized to manufacture battery chargers. M. F. McCarthy is secretary.

## Canada

TORONTO, Aug. 17.

**D**EMAND for single tools continues to predominate in the Canadian market. Buyers confine purchases chiefly to tools for replacement and large lists on new works account are few and far between. Several manufacturing plants are under construction for which tools and equipment will be purchased in the next month or two and dealers and builders look for improved demand about the middle of next month. A good demand is reported for small tools but users are buying mostly for

immediate needs and are not laying in extensive stocks at present.

I. H. White, Town Clerk, Port Colborne, Ont., is receiving bids for construction of waterworks plant and equipment including pumps, etc.

The Town Council of Stoney Creek, Ont., is obtaining information and prices on equipment for a waterworks plant and system now under consideration.

The London Rolling Mill Co., Phillip Street, London, Ont., has started work on an addition to its plant, 45 x 200 ft. Owners will purchase tools and equipment and look after installation of electric furnaces.

Plans are being prepared by J. T. McLellan, Kenora, Ont., engineer Backus Brooks Co., for a \$1,500,000 addition to the paper mill and \$1,000,000 power plant at Fort Frances, Ont., for the company. It is expected that construction work will be started within two months.

The Pigott-Healy Construction Co., 36 James Street S., Hamilton, Ont., has the general contract for a \$100,000 addition to the plant of the Oneida Community Silver Co., on Ferry Road, Niagara Falls, Ont.

The Foundation Co. of Canada, Medical Arts Building, Montreal, Que., has the general contract for a paper mill to be erected at Peribancq, Que., for the Port Alfred Pulp & Paper Corporation, 190 St. James Street, Montreal.

The Kayser Silk Mfg. Co., Sherbrooke, Que., has let a general contract to the Newton Dakin Construction Co., 10 Cathcart Street, Montreal, for the erection of a \$60,000 addition to its factory.

R. S. & W. S. Lea, 340 University Street, Montreal, are preparing plans for power development at Coaticook, Que., for the town council, to cost \$180,000.

The Renfrew Electric Products, Ltd., Renfrew, Ont., is in the market for a low pressure steam boiler.

A. Jobborn, 11 Brock Street East, Hamilton Ont., is in the market for a pyrometer suitable for tool hardening; also a sclerometer.

The Electric Engineers, Ltd., Calgary, Alta., is in the market for a synchronous motor, at least 100 kva., 3 phase, 60 cycle, either 220 or 2200 volts.

Bids will be received by the town clerk, Vegreville, Alta., for a fuel oil engine and addition to power plant. Plans and specifications are with the town clerk.

Bloedel, Stewart & Welch, South Vancouver, B. C., will rebuild drykilns recently destroyed by fire.

The Ellison Milling Co., Lethbridge, Alta., proposes to build a 30,000-bu. grain elevator at Diamond City, Alta.

The Fraser River Elevator Co., 718 Granville Street, Vancouver, B. C., will ask bids at an early date for a wharf and grain elevator on the waterfront at Port Mann, B. C., estimated to cost \$300,000. Consulting engineer, W. G. Swan; architects, C. D. Howe & Co., Port Arthur, Ont.

## Foreign

THE Electric Power Board, Marlborough, New Zealand, asks bids until Sept. 22 for turbines, generators, switchgear and auxiliary equipment for a new power station.

The State of Victoria Electricity Commission, Melbourne, Australia, plans to ask bids soon for its proposed hydroelectric power project at the Sugarloaf Reservoir, consisting of five generating stations at Snobs Creek, and two on the Rubicon, to develop a total of 25,000 kw. Work will include flumes, pipe-lines, transmission towers, etc., and is estimated to cost \$5,000,000.

The Sibambe-Cuenca Railway, Cuenca, Ecuador, will build car and locomotive repair shops in connection with the proposed construction of its Tipococha-Tambo section, on which work will begin soon. The project will cost about \$420,000. Address Bureau of Foreign and Domestic Commerce, Washington, Reference No. 177210.

The secretary of the Public Works Department, Wellington, New Zealand, will take bids until Sept. 29 for approximately 440 suspension towers, 100 angle towers, and 20 strain towers, all galvanized steel transmission line type, complete with cross-arms, ground stubs and accessories, for the Waikato Power Scheme.

## Industrial News Notes

The Beck, Riley & Hall Equipment Co., Pittsburgh, has been incorporated as a subsidiary of the Clapp, Riley & Hall Equipment Co., 12 South Canal Street, Chicago. Its business is buying and selling equipment such as steam shovels, locomotives, locomotive cranes, dump cars and other construction equipment, both new and used. It plans

to establish a shop in Pittsburgh. President H. F. Riley states that the company will likely engage in manufacturing construction equipment during the next year.

The Brecko Concrete Productions Co., Stahlman Building, Nashville, Tenn., has taken over the business of the Hakon Products Co. and will lease to other companies its machine and process for making blocks. It has been organized with capital of \$50,000. J. H. Murphy is one of the principals.

The Crown Mfg. Co., 2115 Victor Street, St. Louis, incorporated with \$24,000 capital stock, will acquire the business of the company by that name which has been active several years manufacturing automobile accessories and kindred lines. It has a fully equipped plant, but is interested in carload purchases of steel from time to time. R. L. Payne is one of the heads.

Carter & Carter, Garland, N. C., is planning to establish an extensive business in buying and selling all kinds of waste material, including iron and other metals.

The George Haiss Mfg. Co., maker of elevating and conveying machinery, New York, is completing an addition to its plant of one story, 150 x 225 ft., equipped with a mezzanine floor of steel and brick construction. The addition will be equipped with a 15-ton, 50-ft. span electric crane and two 10-ton cranes, and will be used as an assembly shop, affording 40,000 sq. ft. for assembling wagon loaders and crawler attachments for Fordson tractors.

The Walter T. Sewell Co., Gratot and Beaufait Streets, Detroit, has been incorporated to distribute Sewell wheels.

Plans for the erection of the first unit of the plant which will manufacture the J. O. Heinze cultivating tractor, as designed by J. O. Heinze, are under way. The J. O. Heinze Cultivating Tractor Co. has been incorporated and initial operations provide for a daily output of 10 tractors. Half a ton of pig iron is used in each tractor.

The Thomson Rail Corporation, New York, manufacturing a patented rail and tie plate, has been incorporated. The rail is specially designed for use with head free rail joints, which are the product of the Rail Joint Co., 61 Broadway, New York. The head free continuous joint has been adopted as standard for the 130-lb. rail by the Reading Co., which has obtained shop rights from the Thomson corporation for the use of the head free rail. About 6000 tons of these rails will be rolled shortly by the Bethlehem Steel Co. McLeod Thomson, 1017 Pennsylvania Building, Fifteenth and Chestnut Streets, Philadelphia, is president of the Thomson corporation.

Alton V. Pitts, for the past seven years general superintendent Kent Machine Co., Kent, Ohio, has organized the Pitts Foundry Co., Birmingham, Ala., of which he is president and treasurer. The company has leased and is operating the foundry building and pattern shop formerly occupied by the American-Blakeslee Mfg. Co. It has a melting capacity of 20 tons daily and specializes on gray iron castings up to 4000 lb.

The Blackstone Coal Co., Pomeroy, Ohio, plans to rebuild its Rutland tipple, breaker and power house, destroyed by fire Aug. 8 with a loss of \$150,000.

The Akron Lamp Co., 600 South High Street, Akron, Ohio, manufacturer of lamps and lanterns, plans a third-story addition. J. C. Steese is president.

The P. & D. Body Co., Quincy, Ohio, has been organized to manufacture automobile bodies and parts, specializing in truck bodies. A plant is under construction and another building will be erected this fall.

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# Current Metal Prices

On Small Lots, Delivered from Merchants' Stocks, New York City

The following quotations are made by New York City warehouses.

As there are many consumers whose requirements are not sufficiently heavy to warrant their placing orders with manufacturers for shipments in carload lots from mills, these prices are given for their convenience.

On a number of items the base price only is given, it being impossible to name every size.

The wholesale prices at which large lots are sold by manufacturers for direct shipment from mills are given in the market reports appearing in a preceding part of THE IRON AGE, under the general headings of "Iron and Steel Markets" and "Non-Ferrous Metals."

Bars, Shapes and Plates		Per Lb.
Bars:		
Refined iron bars, base price	.....	3.24c.
Swedish charcoal iron bars, base	....	7.00c. to 7.25c.
Soft steel bars, base price	.....	3.24c.
Hoops, base price	.....	4.49c.
Bands, base price	.....	3.99c.
Beams and channels, angles and tees, 3 in. x $\frac{1}{4}$ in. and larger, base	.....	3.34c.
Channels, angles and tees under 3 in. x $\frac{1}{4}$ in. base	.....	3.24c.
Steel plates, $\frac{1}{4}$ in. and heavier	.....	3.34c.

Merchant Steel		Per Lb.
Tire, $1\frac{1}{2}$ x $\frac{1}{2}$ in. and larger	.....	3.30c.
(Smooth finish, 1 to $2\frac{1}{2}$ x $\frac{1}{4}$ in. and larger)	.....	3.65c.
Toe-calk, $\frac{1}{2}$ x $\frac{3}{8}$ in. and larger	.....	4.20c.
Cold-rolled strip, soft and quarter hard	.....	7.00c.
Open-hearth spring steel	.....	4.50c. to 7.00c.
Shafting and Screw Stock:		
Rounds and hex	.....	4.00c.
Squares and flats	.....	4.50c.
Standard tool steel, base price	.....	15.00c.
Extra tool steel	.....	18.00c.
Special tool steel	.....	23.00c.
High-speed steel, 18 per cent tungsten	.....	70c.

Sheets		Per Lb.
Blue Annealed		
No. 10	.....	3.89c.
No. 12	.....	3.94c.
No. 14	.....	3.99c.
No. 16	.....	4.09c.

Box Annealed—Black		Per Lb.
Soft Steel		
C. R. One Pass		
Per Lb.		
Nos. 18 to 20	3.70c. to 3.95c.	.....
Nos. 22 and 24	3.75c. to 4.20c.	4.35c.
No. 26	3.80c. to 4.25c.	4.40c.
No. 28*	3.90c. to 4.35c.	4.50c.
No. 30	4.10c. to 4.55c.	.....

Galvanized		Per Lb.
No. 14	.....	4.00c. to 4.45c.
No. 16	.....	4.15c. to 4.60c.
Nos. 18 and 20	.....	4.30c. to 4.75c.
Nos. 22 and 24	.....	4.45c. to 4.90c.
No. 26	.....	4.50c. to 5.05c.
No. 28*	.....	4.90c. to 5.35c.
No. 30	.....	5.40c. to 5.85c.

\*No. 28 lighter, 36 in. wide, 20c. higher per 100 lb.

Welded Pipe		Standard Steel	Wrought Iron		
Black Galv.		Black Galv.	Black Galv.		
$\frac{1}{2}$ in. Butt....	46	29	$\frac{1}{2}$ in. Butt....	4	+19
$\frac{3}{4}$ in. Butt....	51	37	$\frac{3}{4}$ in. Butt....	11	+ 9
1-3 in. Butt....	53	39	1-1 $\frac{1}{2}$ in. Butt....	14	+ 6
2 $\frac{1}{2}$ -6 in. Lap..	48	35	2-in. Lap....	5	+14
7 & 8 in. Lap..	44	17	3-6 in. Lap..	11	+ 6
11 & 12 in. Lap.	37	12	7-12 in. Lap.	3	+16

Bolts and Screws	
Machine bolts, cut thread, 40 and 10 per cent off list	
Carriage bolts, cut thread, 30 and 10 per cent off list	
Coach screws, 40 and 10 per cent off list	
Wood screws, flat head iron, 7 $\frac{1}{2}$ , 25, 10 and 5 per cent off list	

Steel Wire		
BASE, PRICED ON NO. 9 GAGE AND COARSER	Per Lb.	
Bright, basic	.....	4.25c.
Annealed, soft	.....	4.50c.
Galvanized, annealed	.....	5.15c.
Coppered, basic	.....	5.15c.
Tinned, soft Bessemer	.....	6.15c.

\*Regular extras for lighter gage.

Brass Sheet, Rod, Tube and Wire		BASE PRICE
High brass sheet	.....	19 $\frac{1}{2}$ c. to 20 $\frac{1}{2}$ c.
High brass wire	.....	19 $\frac{1}{2}$ c. to 20 $\frac{1}{2}$ c.
Brass rods	.....	16 $\frac{1}{2}$ c. to 17 $\frac{1}{2}$ c.
Brass tube, brazed	.....	27 $\frac{1}{2}$ c. to 28 $\frac{1}{2}$ c.
Brass tube, seamless	.....	23 $\frac{3}{4}$ c. to 24 $\frac{1}{4}$ c.
Copper tube, seamless	.....	24 $\frac{1}{4}$ c. to 25 $\frac{1}{4}$ c.

### Copper Sheets

Sheet copper, hot rolled, 22  $\frac{1}{4}$ c. to 23  $\frac{1}{4}$ c. per lb. base.  
Cold rolled, 14 oz. and heavier, 3c. per lb. advance over hot rolled.

Tin Plates		Prime Seconds
Bright Tin	Grade "AAA"	Coke—14x20
	Grade "A"	80 lb... \$6.15
Charcoal	Charcoal	90 lb... 6.30
14x20	14x20	100 lb... 6.45
IC.. \$11.25	\$8.85	IC.. 6.65
IX.. 12.85	10.85	IX.. 7.85
IXX.. 14.40	12.55	IXX.. 9.00
IXXX.. 15.75	13.85	IXXX.. 10.35
IXXXX.. 17.00	15.05	IXXXX.. 11.35

Terne Plates		8 lb. coating, 14 x 20
100 lb.	.....	\$7.00 to \$8.00
IC	.....	7.25 to 8.25
IX	.....	8.25 to 8.75
Fire-door stock	.....	9.00 to 10.00

Tin		16 c.
Straits, pig	.....	60c.
Bar	.....	65c. to 67c.

Copper		16 $\frac{1}{2}$ c.
Lake ingot	.....	16 $\frac{1}{2}$ c.
Electrolytic	.....	16 $\frac{1}{2}$ c.
Casting	.....	16 c.

Spelter and Sheet Zinc		9 $\frac{1}{4}$ c.
Western spelter	.....	9 $\frac{1}{4}$ c.

Sheet zinc, No. 9 base, casks		12 $\frac{1}{2}$ c., open 13c.
.....	.....	12 $\frac{1}{2}$ c., open 13c.

Lead and Solder*		30 $\frac{1}{2}$ c.
American pig lead	.....	10c. to 12 $\frac{1}{2}$ c.
Bar lead	.....	12c. to 13c.
Solder, $\frac{1}{2}$ and $\frac{1}{2}$ guaranteed	.....	40c.
No. 1 solder	.....	37c.
Refined solder	.....	30 $\frac{1}{2}$ c.

\*Prices of solder indicated by private brand vary according to composition.

### Babbitt Metal

Best grade, per lb.		75c. to 90c.
Commercial grade, per lb.	.....	35c. to 50c.
Grade D, per lb.	.....	25c. to 35c.

### Antimony

Asiatic	.....	20c. to 21c.
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### Aluminum

No. 1 aluminum (guaranteed over 99 per cent pure), in ingots for remelting, per lb.	.....	38c.
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### Old Metals

The market is strong and advancing. Dealers' buying prices are as follows:

		Cents Per Lb.
Copper, heavy crucible	.....	12.50
Copper, heavy wire	.....	12.00
Copper, light bottoms	.....	9.75
Brass, heavy	.....	7.25
Brass, light	.....	6.25
Heavy machine composition	.....	9.25
No. 1 yellow brass turnings	.....	8.50
No. 1 red brass or composition turnings	.....	8.50
Lead, heavy	.....	8.00
Lead, tea	.....	6.50
Zinc	.....	4.50
Cast aluminum	.....	17.50
Sheet aluminum	.....	17.50

